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AUGUST 1956

Contractors and Engineers

magazine of modern construction

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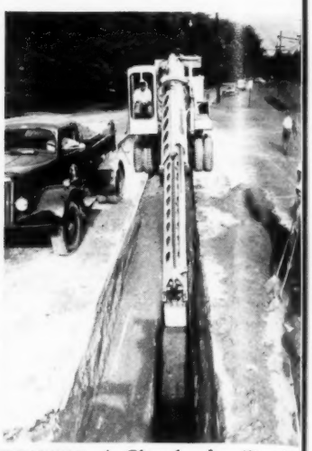
FINE GRADING—Contractor L. C. Smith finish grades 12,000 running feet of slope.

EXCAVATING—A Denver contractor finds Gradall best for digging in rock.

CONCRETE RIPPING—Gradall rips reinforcing rod from old New Jersey road.



TRENCHING—A Cleveland utility digs clean trench for conduit installation.

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Contractors and Engineers

magazine of modern construction

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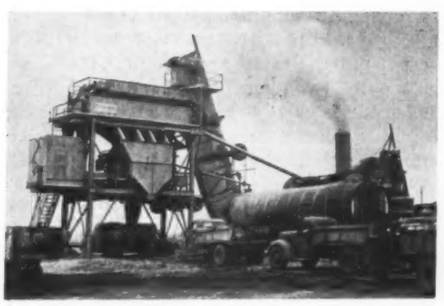
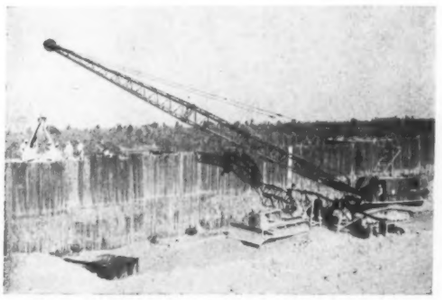


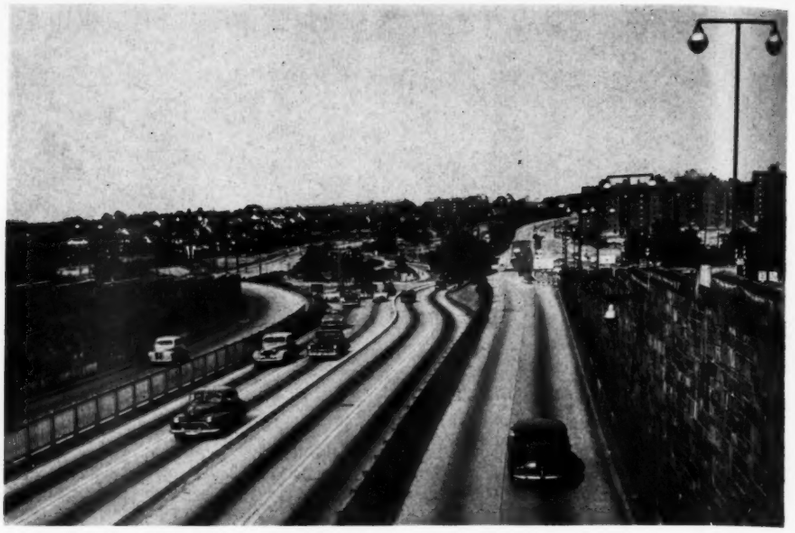
Asphalt plant paces job. Page 42



Pumping station erection. Page 70

editorial

13 Busy years ahead for roadbuilding



While the new Highway Act of 1956 covers a 13-year period, it is imperative that all the states get their various programs in high gear as speedily as possible. The money is available, thanks to a Congress that showed a remarkable degree of unanimity this year in voting the road measure, as compared with its intransigence of 1955. The highway contracting industry, according to the Associated General Contractors of America, has the capacity to carry out this expanded highway construction program efficiently and economically, giving the public full value for its investment. Now, it's up to the highway departments and road commissions of all the states to award the necessary contracts without delay.

The American Road Builders Association points out that the actual funds to be spent on roadbuilding in this country over the next 13 years will be considerably greater than the commonly-quoted $33 billion of the new highway act. This figure includes $25 billion for the 41,000-mile interstate system to be constructed during the next 13 years; $2.55 billion for regular federal-aid during 1957, 1958, and 1959 only; $289 million for public domain roads in 1957, 1958 and 1959; and over $5 billion in state matching funds on the first two items. To this must be added funds likely to be authorized in future legislation for the regular federal-aid systems during the ten years of the program beyond 1959 and funds for public-domain roads during the same period. Estimates for these amounts, added to the new authorization, will probably total $51 billion. In addition, state, county, city, and toll road construction—if continued at the current rate of expansion—is expected to approximate the federal-aid program for the next 13 years.

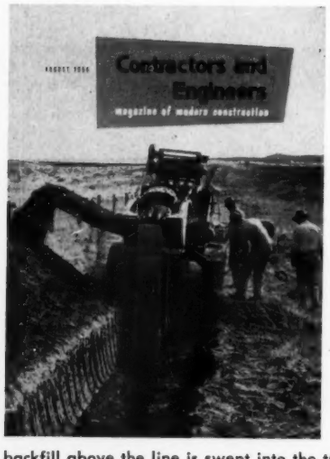
At long last, it seems, the highway is to be given a chance to catch up with the automobile. In the number of vehicles and the horsepower per vehicle, the American car has far outstripped the roads on which it travels.

The most appealing item of the new road program is the 41,000-mile network of interstate highways. These limited access roads will link all but 23 of 232 cities with populations of 50,000 and over with broad, straight pavements, four to eight lanes wide, that will crisscross the country from coast to coast and border to border. The safe, modern roads will lead both into and around cities.

Taxes are up, of course, for this pay-as-you-go program, since the driver foots the bill. But the $8 per year which each of the 54 million car owners is expected to pay, plus a higher sum from 10 million truckers, is a reasonable assessment. The motorist is assured that the extra levy of a cent a gallon on gasoline, and the new or additional taxes on tires and trucks and their equipment, is safe from diversion in a special highway trust fund. And he will save on the operating costs of his car by being able to drive over smooth roads without constantly starting and stopping because of traffic congestion. Experts figure that savings per motorist will be at least one cent per mile. Best of all, he will be safer driving on roads built to modern standards.

The public, however, cannot expect a sudden transformation in its driving routine. It will take time to modernize a road system that has lagged behind in the automobile age. By December, according to AGC estimates, $400 million in contracts will have been awarded to road contractors, but it will take more contracts than these in the next few years before there is a noticeable improvement in the highway situation.

In the meantime, equipment manufacturers, material suppliers, contractors, and highway engineers, like the states, might well raise their sights to the job ahead. Increased production is needed from all segments of the highway industry to meet the peak demands of this great program. The next 13 years are going to be busy ones indeed for road building.



Excavating an old 14-mile water pipeline, that will be salvaged and reused, is a Gar Wood Buckeye Model 314 ditcher fitted with an outrigger-like plow fabricated by the contractor, Brodie Construction Co., Amarillo, Texas. Equipped with H&L teeth, the ditcher's endless bucket chain trenches next to the line, while 2 feet of backfill above the line is swept into the trench and excavated by the ditcher. **Page 24**

CONTRACTORS AND ENGINEERS

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New road to nation's capital tied in with important routes

In the 3-mile section that includes the Palmer highway interchange, C. H. Lawson Inc., Williamsburg, Va., and Rea Construction Co., Charlotte, N. C., use an International TD-24 to push-load a Euclid scraper during grading operations.

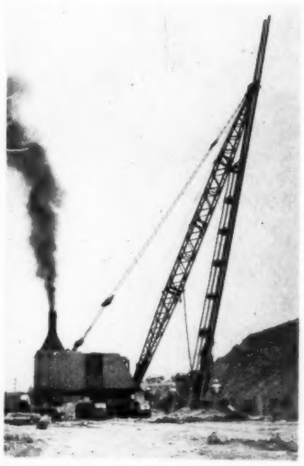
C&E Staff Photos

Of the contractors working on the last 12.2 mile stretch of the Annapolis-Washington Expressway, several are concerned with completing interchange construction on the highway, which when completed next year, will link the Chesapeake Bay Bridge and Annapolis with the nation's capital.

At the west end of the expressway, Williams Construction Co., Baltimore, Md., is busy on the $2,758,549 Kenilworth interchange contract, which includes three bridges and 3½ miles of roadways and ramps. This will provide access to the Baltimore-Washington Expressway and the relocated River Road.

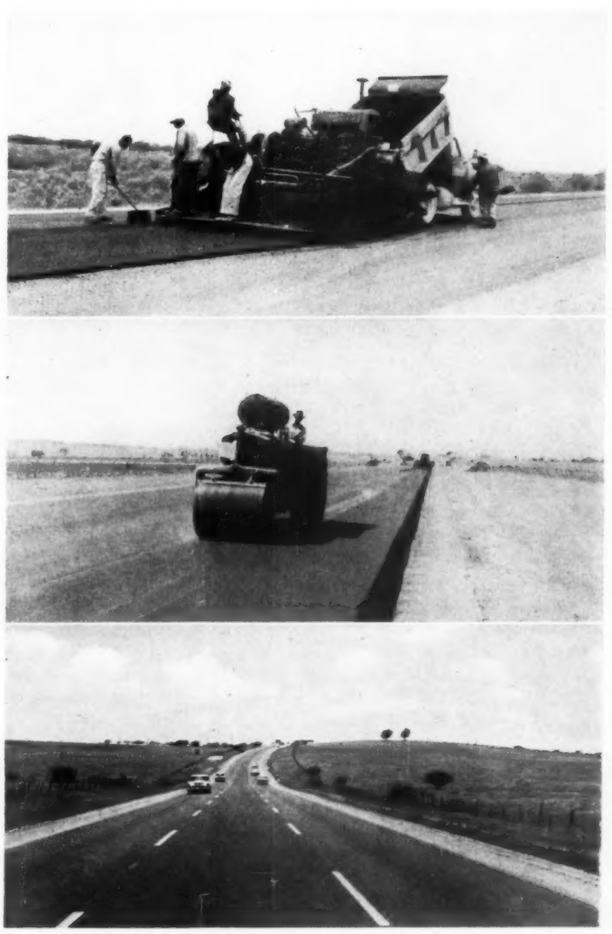
Bridge foundations, being built under subcontract by National Pile Driving Corp., Philadelphia, Pa., require about 22,300 linear feet of Union Monotube 12 and 14 inch piles averaging 40 feet in length. A Marion 23 steam crane, with 90 foot leads and 70-foot boom, is driving the 12-inch piles to 30-ton bearing and the 14-inch piles to 35-ton bearing with a Vulcan 50C hammer before they are filled with reinforced concrete.

The interchange at Palmer highway, which will provide access to suburban Washington, is included in the $1,907,668 contract for a 3-mile section being built by the joint-venture firms of C. H. Lawson Inc., Williamsburg, Va., and Rea Construction Co., Charlotte, N. C. A fleet of Euclid 15 and 21-yard scrapers, push-loaded by International TD-24, are moving the 1,400,000 yards of earth in the 250-foot right-of-way in this section. A typical stretch, this will have two 25-foot roadways separated by a 48-foot grassed median. The median leaves room for a future 13-foot lane addition to each 9-inch-thick reinforced concrete roadway. THE END



A Marion 23 steam crane, with 90-foot leads and 70-foot boom, drives a 14-inch Union Monotube pile to 35-ton bearing with a Vulcan 50C hammer, as foundation work continues for one of the bridges in the Kenilworth interchange contract.

Lays 16.7 miles of Texaco Asphalt pavement in 25 working days



Laying a new plant-mixed Texaco Asphaltic Concrete pavement on 16.7 miles of U. S. Route 81, north and south of San Marcos, Texas in 25 working days. Traffic, which averages 6,200 vehicles a day, was uninterrupted.

The Gaylord Construction Company of Houston recently laid 16.7 miles (about 313,000 square yards) of plant-mixed Texaco Asphaltic Concrete paving on U. S. Route 81, south of Austin, Texas. Although the contractor used a single asphalt paving machine, he completed this sizable project in 25 working days.

To motorists, as well as to businesses along a highway or street, the speed with which paving operations are completed is an important consideration.

In addition to the rapidity with which it is constructed, heavy-duty Texaco Asphaltic Concrete paving possesses rugged durability. Its low upkeep cost has been demonstrated on many of the country's busiest roads and streets. It is immune to chemicals used to eliminate ice and snow. Its highly skid-resistant texture and the sharp visibility of traffic lines on its dark surface contribute importantly to safe motoring.

Helpful information for the road builder on methods and materials recommended for hot-mix, hot-laid Asphaltic Concrete paving is supplied in the booklet, "Texaco Asphalt Paving—Plant-mixed Types". Our nearest office will be glad to mail you a copy.

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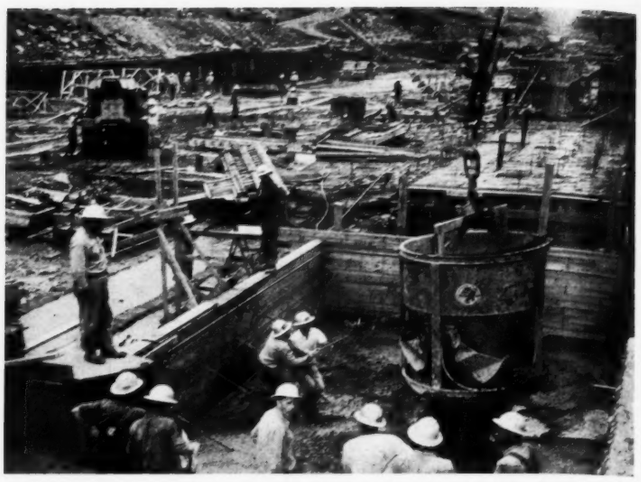
One of the Dumpcrete trucks, mounted on a Ford F-700, dumps 2 yards of concrete into a Heltzel bucket at the site of one of the lock wall pours. The 3-yard Dumpcrete obtains loads from 2-yard mixers at the plant. *C&E Staff Photos*



Concrete is swung and dumped to a footing form by the Heltzel bucket. Workmen with Chicago Pneumatic Model 518 two-man vibrators wait to consolidate the material.

Concrete handling, placing hurry lock job to completion

Project aids coal shipments to plant powering AEC installations; barge-mounted pumps, used to unwater cofferdam, work in emergency

by RALPH MONSON, field editor

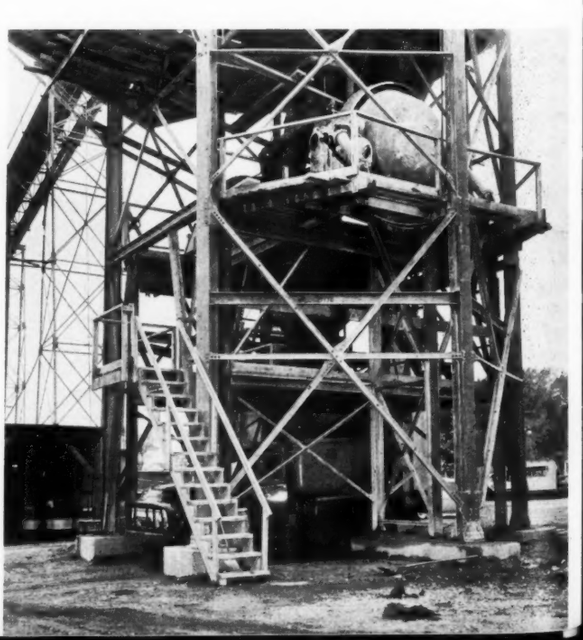
Concrete goes into the land wall of the lock in 10-foot lifts. The Blaw-Knox steel forms are tied with Williams form hardware, and front and rear faces are usually kept intact when forms are moved to another monolith.

A smoothly organized setup for concrete production and placement rushed Lock No. 2 on the Green River at Calhoun, Ky., to completion just a few weeks before work was finished on the new dam about 150 feet downstream. Efficient handling of concrete materials at the plant site, coupled with fast transportation of concrete in the five 3-yard Dumpcretes that hauled the 2-yard output of the Koehring mixers, hurried this job for Hardaway Contracting Co., Columbus, Ga., the general contractor on the job. Actual placement of concrete in Blaw-Knox prefabricated steel forms was done by the crane-and-bucket method.

Program aids navigation

Both Lock and Dam No. 2 are part of the program for improvement of navigation facilities on the Green River. About 224 miles upstream from the mouth of the river is the Clifty Creek generating station at Madison, Ind., (See "New Generating Plant to Power AEC Works," C&E, March, 1954, pg. 40) and its generators will swing into full production this year to provide power for nearby Atomic Energy Commission installations. The

A 267-foot inclined conveyor, left, rises from under the plank ramp leading to the bridge over the aggregate stockpiles. The conveyor goes to the distributor at the top of the Blaw-Knox plant.



Materials weighed out in 2-yard batches are mixed in the Koehring concrete mixers on a lower platform of the plant. Each mixer discharges into a 4-yard hopper that fills the Dumpcretes.

boilers of this facility will use 4 million tons of coal, half of which will come from the Green River area, and estimated savings on this operation alone will be enough to justify the expenditure for Green River improvements. Other interests—primarily those moving coal down river and petroleum products upstream—will also benefit.

Lock No. 2 is 84 feet wide, 600 feet long, and has a lift of 14.3 feet. The new dam, completed last month to replace an old timber crib dam, consists of a series of concrete-filled sheet-pile cells with an ogee concrete overflow section. Improvements at Lock and Dam No. 1 include a new lock similar to Lock No. 2 and the removal of gates from the existing lock. An overflow weir at the upper gate section will also be installed. Other work on the river will deepen the channel to 9 feet and widen it at critical points.

This entire program was planned, designed, and is being supervised by the Louisville District of the U. S. Army Corps of Engineers. The contract for the improvement of the river channel from the mouth to mile 103 was awarded last summer and is scheduled for completion this year.

Use prefabricated forms

Construction of the lock walls was done behind a 2,500-foot-long sheet-pile cofferdam, built on the river side of the site, that enclosed a 170-foot-wide area. Lock walls were formed with Blaw-Knox steel-form panels faced with 2 x 6 tongue-and-groove wood lagging and tied with Williams form hardware. Typical monoliths, 10 feet high and 40 or 42 feet long, were formed with 10 x 10 and 10 x 6-foot panels. Front and rear face forms were usually kept intact when they were moved from one monolith to the next. A Lima Paymaster crane or a Lorain TL-20 truck-crane picked up the 10 x 42-foot sections of form, which weighed about five tons each, and moved them to the next position.

A tunnel under the lock floor, connecting the discharge ports on the land side of the lock with the river, was excavated as a trench across the lock. It was lined and roofed with concrete, a Blaw-Knox rolling tunnel form being used to shape the inside. No outside forms were required, as the sides were poured against the rock and the top was the finished lock floor.

During the erection of lock and guide walls, which extend about 500 feet up and downstream from the land wall of the lock, carpenter crews worked two shifts per day on the forms. Crews placing the steel and concrete worked a single shift, although the concrete crew frequently worked slightly more than 8 hours. During most of the active construction periods, the total crew numbered about 220 men.

Webrib reinforcing steel, manufactured by Copperweld Steel Co., Warren, Ohio, was used almost exclusively on the project. A specially

(*Continued on next page*)

Aggregate in 1½ and ¾-inch sizes is dumped through the open floor of this bridge to stockpiles. Recovery is made by a Barber-Greene conveyor that operates inside an Armco 281-foot tunnel under the stockpiles. *C&E Staff Photo*

The No. 12...OUT IN FRONT ...any way you figure!

That's a big, rugged Caterpillar No. 12 Motor Grader out in front of those fast DW20s. It is maintaining haul roads for Gordon H. Ball of Danville, Calif. The job is the new Lafayette Freeway, where a million and a half yards of earth are being moved.

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(*Continued from preceding page*)

shaped reinforcing steel, it has only 2/3 the weight of conventional reinforcing for the corresponding sections. This is thought to be the first use of Webrib reinforcing on a Corps of Engineers' project in the Louisville District.

Concrete-placing operations were carried on through the winter months when temperatures frequently dropped below freezing. In fact, the initial concrete placement was made in January, 1955. To provide warm concrete, the contractor heated mixing water by running it through a steam boiler. No steam was actually generated, but the water was heated sufficiently to warm the mix.

Newly placed concrete was covered with tarpaulins and heated with Master oil-burning heaters. Form insulation was also used on some of the mass pours. All concrete was cured with water, which was pumped directly from the river and circulated throughout the job by a system of mains.

Concrete

All concrete for the structure was mixed in a Blaw-Knox plant set up on the bank beside the lock and delivered to the point of placement in Dumpcretes on Ford F-700 trucks.

Two sizes of coarse aggregates—1½ and ¾-inch—and coarse sand were delivered to the plant in trucks from nearby producers. The crushed-rock aggregates came from State Contracting & Stone Co., Hartford, Ky., and the sand from Owensboro River Sand & Gravel Co., Owensboro, Ky.

Material trucks entering the yard were weighed on a Thurman 30-ton truck scale. Then they drove up a timber ramp onto an open-deck bridge to dump their loads through the deck to the stockpiles below. A Barber-Greene recovery conveyor operated inside a 281-foot-long Armco horseshoe-shaped tunnel under the stockpiles. The 298-foot tunnel conveyor carried materials to a 267-foot inclined conveyor which fed the distributor over the bins at the top of the plant.

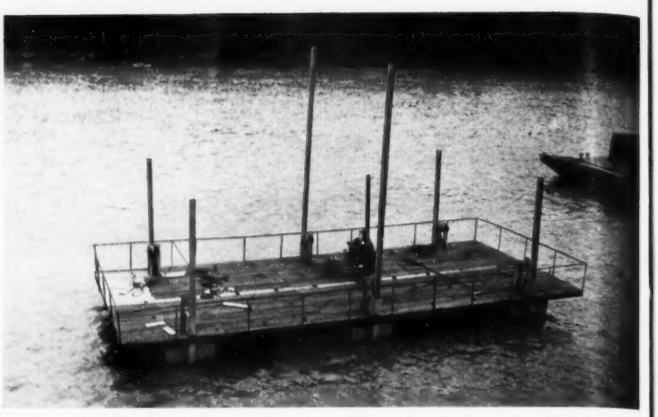
The plant was equipped with automatic electric bin signals which indicated to the men in the tunnel that a bin was full. A cable-controlled device permitted the workman at the mouth of the tunnel to rotate the distributor from one bin to another. This system eliminated the necessity of having a workman at the top of the plant. When the lights flashed in the tunnel, indicating that a bin was full, the workman rotated the distributor to another bin, opened the corresponding tunnel gate, and waited for the light to flash again.

A maximum of 10 per cent of fine dry sand was added to the mix. This material was delivered in sacks and fed to the bin of the plant by a bucket elevator.

Cement was delivered to the job from the Kosmos plant at Louisville, Ky., in Highway 65-barrel self-unloading trailers pulled by White and Mack trucks. Screw conveyors and elevators carried the cement from the truck hopper to a 500-barrel compartment in the bins of the plant. An auxiliary 1,000-barrel silo was set up to take the overflow from the bin by gravity and return it to the bin through the elevator when it was needed.

Materials were weighed out from the bins in 2-yard batches and mixed by two Koehring mixers mounted on the lower platform of the plant. Each mixer discharged into a 4-yard hopper equipped with an air-ram gate. The Dumpcretes were filled from the hopper. The mixers had a rated capacity of 450 cubic yards each per 8 hours, making a capacity of 900 cubic yards per shift for the plant.

A typical 2-yard batch of concrete



Outside the cofferdam, where water is too shallow for a conventional drill boat, a special 25 × 55-foot timber drilling platform is used in the job of deepening and widening the approach channels. Gardner-Denver wagon drills operate through pipe sleeves set in holes in the deck, which is supported on rectangular steel box floats and held in place by six spuds. *C&E Staff Photo*

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contained the following quantities:

Cement	752 lbs.
Fine sand	168 lbs.
Coarse sand	1,975 lbs.
Stone (1½-inch)	2,742 lbs.
Stone (¾-inch)	2,716 lbs.
Water	320 lbs.
Darex AEA	25 ozs.

These proportions produced a stiff mix with a relatively high air content. It handled well in the Dumpcretes, no segregation was visible, and no dumping difficulty was encountered.

The 3-yard Dumpcretes usually hauled 2-yard loads, which matched the capacities of the mixers in the plant and of the Heltzel 2-yard bucket used to place concrete in the forms. Five of the 3-yard Dumpcretes were usually used with an extra 2-yard rig as a standby. One of two Lima Model 1201 cranes bucketed concrete to the forms, where workmen used Chicago Pneumatic Model 518 and 417 air-powered vibrators to consolidate the mix. On large pours, the 518 two-man vibrator was particularly effective. An Ingersoll-Rand 600-cfm Gyro-Flo compressor supplied air for the vibrators.

Excavation includes dredging

Excavation for the lock and approach channels, including nearly a half-million cubic yards of common excavation and 122,000 cubic yards of rock, was sublet to Robertson-Bolen & Fowler, Inc., Huntington, W. Va. The underwater excavation in the approach channels was further sublet to the M&O Dredging Co., Pittsburgh, Pa.

On the common excavation, R-B&F used a combination of scrapers and draglines. Some of this earth excavation was on the lock site inside the cofferdam, but a substantial part of it was for the construction of a diversion channel to bring Long Fall Creek into the river below the dam.

A Highway self-unloading cement trailer, pulled by a Mack truck, prepares to empty to the Blaw-Knox plant that has been set up beside the lock. Screw conveyors and elevators carry cement from the truck hopper to the 500-barrel compartment. *C&E Staff Photo*

A spread of three LeTourneau-Westinghouse D Tournapulls made the initial cuts, going down about 12 feet to a point where wet material and muck were encountered. An International TD-18 tractor push-loaded the scrapers. Three draglines followed the scrapers, loading the wet material into five Euclid 9-yard end-dumps. The draglines, a Lima 802 and a Lima Paymaster, were later converted into shovel and backhoe for the rock excavation in the lock.

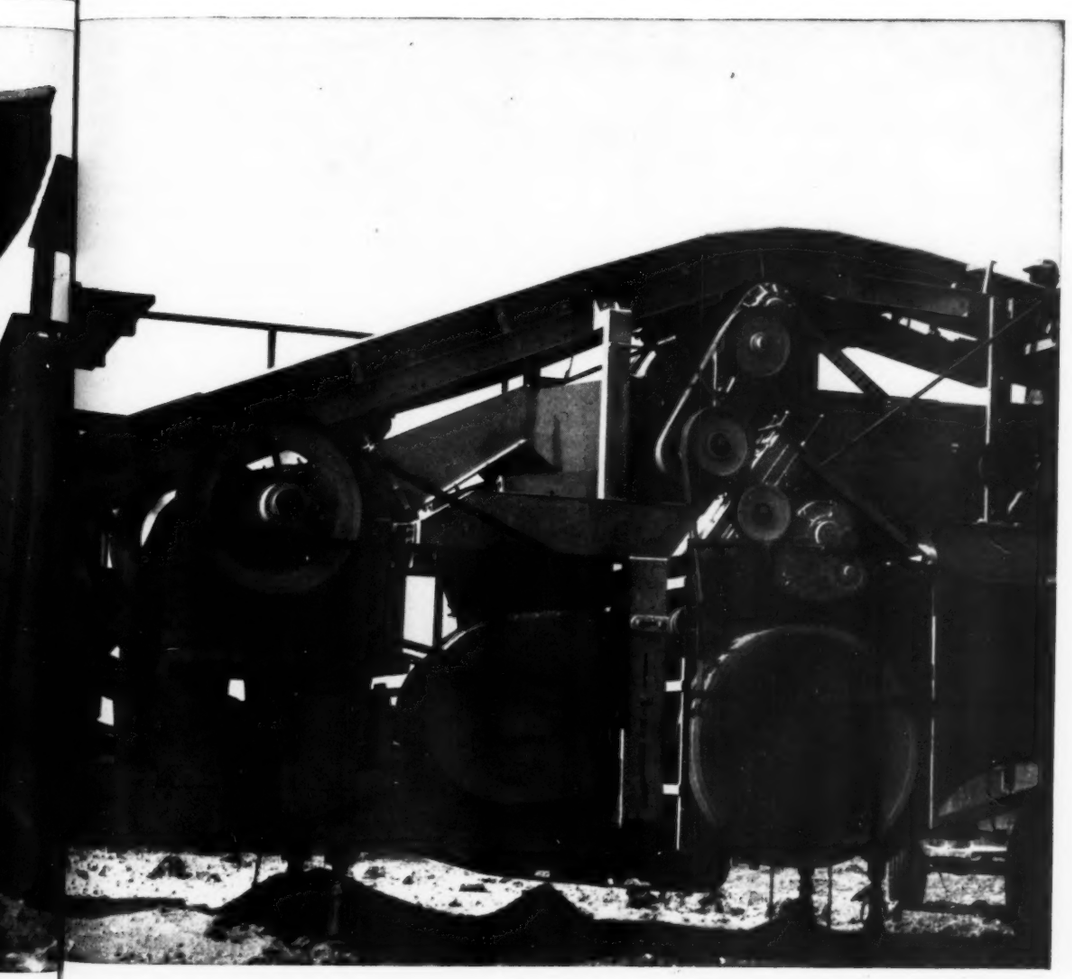
Two Caterpillar D8 tractor-dozers and an Allis-Chalmers HD-15 assisted the draglines and shovels in spreading and compacting the fills. A LeTourneau-Westinghouse 120 sheepsfoot roller compacted the backfill in the old creek channel and other embankments, and a Caterpillar No. 12 motor grader maintained haul roads and finished the fills.

Before lock excavation could proceed, a cofferdam had to be built around the river side of the site. This cofferdam, 2,500 feet long and enclosing an area 170 feet wide, was constructed of a series of sheet-pile cells 40 feet in diameter and ranging from 32 to 41 feet high. M-116 sheets were set around the template and driven from 2 to 4 inches into the riverbottom shale by a McKiernan-Terry 9-B-3 steam hammer. A Littleford Kwik-Steam generator supplied steam for the hammer.

Two Lima Model 1201 cranes handled the template, sheet piling, and hammer. No floating equipment was used, as the cranes worked from one cell to the next. Pit-run gravel, hauled to the site in dump trucks, was chuted into the cells as they were driven.

Barge-mounted pumps

During this phase of the work, Hardaway made a wise move by mounting a battery of heavy-duty pumps on a barge to unwater the cofferdam. As the water level inside the cofferdam dropped, the barge, with its load of pumps, settled slowly until it rested on a rock ledge which had been the river bottom. Usually, this would have marked an end to



MORE THAN 625 MILLION POUNDS OF EXACO MARFAK AVE BEEN SOLD

OTHER MEMBERS OF THE MARFAK FAMILY

Texaco Marfak Heavy Duty—for wheel bearings—assures extra thousands of miles of protection because it seals out dirt and moisture, seals itself in. You enjoy longer bearing life, lower maintenance costs. No seasonal change required.

Texaco Marfak Heavy Duty Special 2—multi-purpose, lithium-base lubricant for chassis, wheel bearing, water pump and other grease lubrication. Pumps easily at winter temperatures, resists water washing and stands up in severest service.

Lubricants and Fuels
FOR ALL CONTRACTORS' EQUIPMENT

For more facts, use Reader Reply Card opposite page 18 and circle No. 204

A Gardner-Denver wagon drill, mounted on runners that ride on rails, line-drills shale before it can be excavated. Holes averaged 10 to 14 feet deep, though some went 24-feet deep. A Lima backhoe excavates in this narrow cut. *C&E Staff Photo*

(*Continued from preceding page*)

work by all the pumps, excepting the one or two necessary to remove rainfall and seepage.

But the contractor, believing in being prepared to cope with the unpredictable river, kept all the pumps in place on the barge. This move paid off a few months later when a period of heavy rain caused the river to rise. When overtopping of the cofferdam seemed inevitable, the contractor removed his equipment and material to high ground and flooded the cofferdam through a system of gates.

As the water rose within the cofferdam, the barge—loaded with pumps—rose with it, riding out the flood even when the waters had risen as much as 3.5 feet above the top of the cofferdam. As soon as the flood receded, the pumps repeated the unwatering operation and then stood in readiness in case of another emergency. The flood waters caused work to be suspended for 49 days, but did no real damage. Work was resumed as soon as the flood waters receded and the cofferdam had been unwatered.

The battery of pumps on the barge had a capacity of 40,000 gpm, and included seven Jaeger 10-inch centrifugals, six of them powered by gasoline engines and one powered by a diesel. Assisting were 4-inch and 6-inch electric pumps and Jaeger and Gorman-Rupp 8-inch gasoline-powered units. The big pumps were mounted on a barge 47 feet long, 16 feet wide, and 3 feet deep, and each of the 10-inch pumps had its own 12-inch suction line and 10-inch discharge line that ran over the cofferdam cells and discharged into the river. A Gruvagrip coupling on each of the 10-inch discharge lines swiveled to provide flexibility as the barge was lowered.

Rock excavation

Wherever the concrete of the lock was to be poured against the excavated rock, the rock faces were close-line drilled to prevent the unexcavated material from shattering. The drilling of these long straight lines of closely spaced holes was done by two Gardner-Denver wagon drills, which were removed from their wheel mountings and fitted with channel runners. These runners engaged a pair of rails laid on the alignment of the row of holes to be drilled.

These drills, slid along the rails by hand power, put down 2¼-inch holes at 4½-inch centers on a very straight and true line. The depths of holes drilled varied from 2 to 24 feet, but the major portion of the line drilling was at depths of 10 to 14 feet. This close-line drilling provided a neat straight face after the excavation was complete. No broaching or further trimming was required, and there was no noticeable shattering of the remaining material.

Holes for blasting were drilled by Gardner-Denver and Ingersoll-Rand wagon drills using Timken renewable bits. Two Gardner-Denver 600-cfm compressors supplied a large part of the air, but Ingersoll-Rand 315 and 105-cfm compressors were also used. The 2 to 2½-inch blast holes, spaced at about 6-foot centers, were loaded with Atlas and Du Pont 40 per cent gelatin at a rate of about one pound for each 3 cubic yards of rock. Atlas Rockmaster caps with one to five millisecond delays were arranged to lift the center of each shot first and then blow in the sides. Holes were usually drilled to within one foot of finished grade. The bottom of the excavation was later finished by hand with paving breakers. Because the shale had a tendency to weather on exposure to air and moisture, the finished grade was left about an inch

Road Building Contractors and Engineers!

The HYSTER® "GRID" ROLLER

Gives You Three Machines in One!

Road builders all over the country today are using the Hyster "Grid" Roller on three *major road construction* and maintenance operations:

HIGH-PRODUCTION COMPACTION
LOW-COST ROCK CRUSHING
EFFICIENT BITUMINOUS SALVAGE

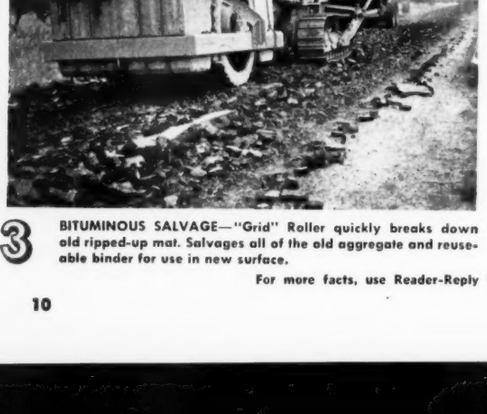
These three "Grid" Roller applications have proved this machine's value on job after job, on all types of road construction—free-ways, secondary roads, farm-to-market roads and logging roads.

Your Caterpillar* Dealer salesman has information that will enable you to increase production and cut costs. Possibly a demonstration can be arranged on your present job. Call him *today*, or write for Forms 1374 or 1375.

See The New Hyster Company sound, color movie "Road Building With The 'Grid' Roller"

1 EMBANKMENT COMPACTION—high speed rolling (up to 15 MPH towed by Caterpillar DW15 Tractor) matches compaction production with yardage of high-speed earth movers.

2 ROCK CRUSHING—pit-run rock can be efficiently and cheaply crushed for base and surface courses on secondary road construction and repair.



3 BITUMINOUS SALVAGE—"Grid" Roller quickly breaks down old ripped-up mat. Salvages all of the old aggregate and reuseable binder for use in new surface.

HYSTER COMPANY

The "Grid" Roller for all types of Road Building

HYSTER

2952 N.E. Clackamas Street, Portland 8, Oregon
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Hyster N. V., Nijmegen, The Netherlands

"Grid" is the registered trademark for the Hyster open-surfaced roller.
*Caterpillar is the registered trademark of the Caterpillar Tractor Co.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 205

high, and this last inch was removed just before the concrete was placed.

Blasted rock was loaded by a Lima 802 and other shovels into a fleet of five Euclid 9-yard end-dumps. Those keyways and other excavations that were too narrow for the 802 to work efficiently were excavated by the smaller Lima Paymaster backhoe. Most of the excavated material was stockpiled for use later as backfill behind the lock walls.

Deepening and widening of the approach channels to the lock were underwater operations and were done outside the cofferdam by the M&O company.

Since the water was too shallow to accommodate a conventional drill boat, the contractor built and used a special floating drilling platform. The timber deck of the platform was 25 feet wide and 55 feet long and was supported on three rectangular steel box floats. Six spuds made of 6-inch H-Beams with pointed ends held the platform in place during drilling operations. The spuds were raised and lowered by individual hand winches.

Gardner-Denver wagon drills operated through pipe sleeves set in holes in the deck. There were 55 of these holes arranged in a gridiron pattern, making it possible to drill that number of holes without moving the rig. The floating platform operated satisfactorily in about a foot of water, but was equally useful in depths of 15 or more feet. A 2½-yard bucket on the dipper dredge, the Pacific, loaded drilled and blasted rock into a fleet of bottom-dump scows, which were shuttled to and from the disposal area by the towboat, Diesel.

Dam construction

The dam, about 150 feet downstream from the old timber crib dam, was started after work on the lock was well along. Completed last month, it consists of a series of interlocking steel sheet-pile cells, 22 feet in diameter. The cells are filled with concrete and capped with an ogee-type overflow spillway. The new dam extends 482 feet from the river wall of the new lock to the opposite bank. The river wall of the old lock is being removed, and the dam will extend across this lock. The old dam is being removed, now that the new one has been completed.

Quantities for the lock and dam include:

Common excavation	473,500 cu. yds.
Rock excavation	122,000 cu. yds.
Line drilling	53,500 sq. ft.
Earth fill	221,000 cu. yds.
Rock fill	80,000 cu. yds.
Concrete in lock	68,000 cu. yds.
Sheet piling (dam cells)	28,000 sq. ft.
Concrete in dam cells	6,250 cu. yds.
Reinforcing steel	140 tons
Wall armor	237 tons

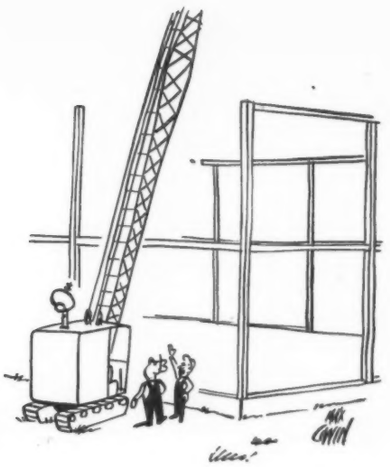
Personnel

The supervisory staff for Hardaway Contracting Co. was headed by project manager W. C. McConnell and included superintendents D. R. Bird and H. K. DeShazo; office engineer J. F. Meagher; and chief-of-party Bob Faircloth. The excavating operations were supervised by O. L. Harman, superintendent for Robertson-Bowlen & Fowler, Inc. Col. W. D. Milne is district engineer of the Louisville District of the U. S. Army Corps of Engineers. Resident engineer Justin O. Young was in immediate charge of the construction of the lock and dam.

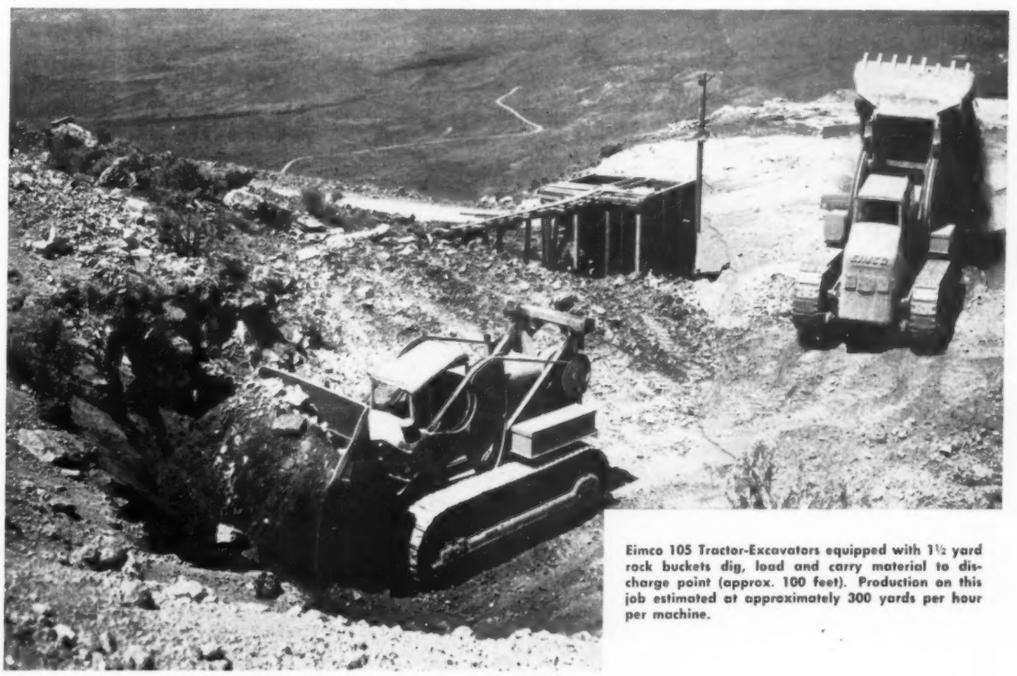
Though the job is completed, the actual work of construction is not a thing of the past that will be forgotten. The contractor took colored movies of all phases of the work and plans to produce a 16-mm color film of the entire operation.

THE END

New York has joined Massachusetts in requiring that all vehicles be covered by liability insurance as a prerequisite to the issue of license plates. The law becomes effective in October.



"It has the longest boom made. You keep track of your load on a radar screen."



Eimco 105 Tractor-Excavators equipped with 1½ yard rock buckets dig, load and carry material to discharge point (approx. 100 feet). Production on this job estimated at approximately 300 yards per hour per machine.

SPEED, VERSATILITY AND DEPENDABILITY WITH EIMCO 105 TRACTOR-EXCAVATORS

Eimco 105 Tractor - Excavators, shown above, dig and load more rock at less cost per yard than any other earthmoving machine.

These Eimco Excavators are multi-purpose machines. They are easily and quickly moved from one spot to another where work is needed. They are used as prime movers, on production excavation and loading jobs, for bulldozing and other work around the plant.

In production work, the Eimco 105 Tractor-Excavator will load in rock at the rate of 5-6 yards per minute and in easier materials such as sand and gravel, the 105 will load as much as 8-9 yards per minute.

Eimco 105's do a better job than the conventional tractor mounted machine because of Eimco's exclusive operating features. Independent track operation increases the effectiveness of the machine in speed of maneuverability, saves travel time and wear and tear on track assemblies, chains and all crawler parts.

The Eimco power shift saves wear and tear on operators, keeps them fresh and alert all day long. Operator position up front makes it possible to see what is being done.

All cast-alloy steel parts are standard equipment on Eimcos at no extra cost. Torque converters, also standard, provide better engine operating flexibility and protect the engine from shock.

Eimco 105's are different in construction, design and operation. They are the only really modern tractors in production today. An Eimco engineer will be glad to tell you about the 105 and answer your questions. When you need a Tractor or Tractor-Excavator be sure to see an Eimco 105 at work, and talk to people using them. You are invited to compare the Eimco 105 Tractor, piece for piece with the tractor you are using or any other tractor.

THE EIMCO CORPORATION

Salt Lake City, Utah—U.S.A. • Export Offices: Eimco Bldg., 52 South St., New York City

New York, N. Y. Chicago, Ill. San Francisco, Calif. El Paso, Tex. Birmingham, Ala. Duluth, Minn. Kellogg, Ida. Baltimore, Md. Pittsburgh, Pa. Seattle, Wash. Pasadena, Calif. Houston, Texas Vancouver, B. C. London, England Gateshead, England Paris, France Milan, Italy Johannesburg, South Africa

B-207

For more facts, use Reader-Reply Card opposite page 18 and circle No. 206

names in the news

C. A. Richardson, Bay State Dredging & Contracting Co.'s vice president and general manager.

Richardson takes post with Bay State Dredging

The new vice president and general manager of Bay State Dredging & Contracting Co., Boston, Mass., is Charles A. Richardson. The company is under the Marine Division of B. Perini & Sons, Inc., Framingham, Mass.

Richardson formerly was with Merritt-Chapman & Scott Corp., New York, N. Y., serving with the company 21 years. Most recently, he was the M-C&S vice president in charge of the New York Marine & Heavy Construction Division.

Bodwell joins staff of N. J. contracting firm

Russel S. Bodwell has been appointed assistant chief engineer of the Union Building & Construction Corp., Passaic, N. J. Formerly associated with Porter, Urquhart, McCreary & O'Brien of Newark, N. J., Bodwell has served as project manager on the New Jersey and Connecticut turnpikes.

Spencer, White & Prentis names new vice president

The former midwestern manager of Spencer, White & Prentis, Inc., engineers and contractors of Detroit, Mich., Howard R. Gould, has been appointed a vice president of the firm. He will make his headquarters in New York, N. Y. James C. Nelson of the firm's Canadian office, will succeed Gould in the Midwest.

Gould is a member of the Engineering Society of Detroit, the Michigan Society of Civil Engineers, the Michigan Society of Professional Engineers, and The Moles.

Fay, Spofford, & Thorndike elect five board members

Five new members—Burdette K. Beebe, Fozi M. Cahaly, Harold H. Jones, Edward C. Keane, and Leon B. Turner—have been elected to the board of directors of Fay, Spofford, & Thorndike, Inc. The Boston, Mass., engineering firm recently became a corporation after a 40-year existence as a partnership.

Beebe, with the firm since 1941, is a registered professional engineer in Massachusetts and other states, and is currently working on sections of the New Jersey Garden State Parkway, the Northern Illinois Toll Road, and several projects in New England. Cahaly's specialty is water works and sewerage projects, while Keane, project engineer in charge of the Boston Central Artery design, is specializing in the field of planning highways, urban expressways, and tunnels.

Jones, known for his work on express highways and many military bases, has been associated with a number of major highway projects and with Air Force installations at Goose Bay and Labrador. Turner, with the company since 1923, directs production of all engineering projects for Fay, Spofford, & Thorndike.

WRI elects two officers

The Wire Reinforcement Institute, an association of manufacturers of steel welded wire fabric, has elected Ivy H. Smith of Jacksonville, Fla., to the office of president for the coming year. He will be assisted by the new vice president, M. E. Capouch, Cleveland, Ohio.

Ivy H. Smith, newly elected president of the Wire Reinforcement Institute.

Smith, owner and president of the Ivy H. Smith Co. of Jacksonville, is also a past president of the American Concrete Pipe Association. Capouch, a sales manager with the American Steel & Wire Division of United States Steel, is a former WRI president.

Managing director of the institute is Frank B. Brown, who has permanent headquarters in Washington, D. C.

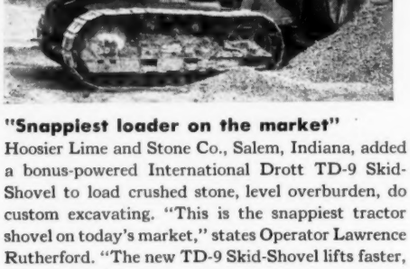
Corps of Engineers news

The U. S. Army Corps of Engineers has appointed Robert W. Beal director of development at the Engineers Research and Development Laboratories, Fort Belvoir, Va. Formerly chief of the laboratories' mechanical engineering department, Beal will be responsible for the establishment of an applications engineering program designed to bridge the gap between research and development.

Col. Eugene J. Stann has taken over the post of district engineer of the Nashville, Tenn., district. Prior to his

"We do '4-hr. jobs' in 2 hrs. with our new TD-9 Skid-Shovel"

—Beatrice Concrete Co.
Beatrice, Nebraska



"Snappiest loader on the market"
Hoosier Lime and Stone Co., Salem, Indiana, added a bonus-powered International Drott TD-9 Skid-Shovel to load crushed stone, level overburden, do custom excavating. "This is the snappiest tractor shovel on today's market," states Operator Lawrence Rutherford. "The new TD-9 Skid-Shovel lifts faster, has more engine power, plenty of operator room and comfort, operates easier, has much better vision."

"First thing we noticed about this new International Drott was that it does former '4-hour jobs' in 2 hours," reports Supt. Eldon Chamberlain. "Watching it showed why it doubles production. This new rig fills a bucket easier and faster with pry-action break-out. Operator has better control, watches bucket action more easily—and added hp does top speed work with no strain on machine or operator."

This ready-mix concrete company also excavates and grades—digs basements, backfills, and loads spoil dirt. They recently replaced their older crawler-loader with a new International Drott TD-9 Skid-Shovel.

"Plenty of power . . . perfect vision"
This new TD-9 Skid-Shovel loads 12 to 15 tons of zinc ore from stockpile, every 3 or 4 minutes. Turley and Yates, Rutledge, Tenn., also dig basements, clear and drain land, do custom loading with it. Says Partner Joe E. Yates: "It's fast, easy to operate, has plenty of power, and perfect loading-cycle vision. Hydro-Spring is a life-saver to unit and operator. Roomy seat and handy controls increase output, reduce tiring."

See how exclusive pry-over-shoe break-out action—now increased to 10,000 lbs. in the International Drott TD-9 Skid-Shovel—gets you the "too-tough-for-others" jobs; helps outproduce 'em anywhere. Prove exclusive, shock-swallowing Hydro-Spring as a cost-cutting yardage-booster. Or, try an exclusive Four-In-One Skid-Shovel—4-machine utility, one moderate investment. Ask for a demonstration!

See you at the ROAD SHOW
CHICAGO
Jan. 28-Feb. 2, 1957

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 8, Wis.

INTERNATIONAL®
DROTT®

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present assignment, Col. Stann attended the Army War College, Carlisle Barracks, Pa. He succeeds Col. G. M. Dorland.

J. Ashton Gray heads prestressed concrete group

J. Ashton Gray was elected president of the Prestressed Concrete Institute at the group's second annual convention in Hollywood, Fla. He succeeds George W. Ford.

The new vice president of the organization is Ben Gerwick, Jr., and the new secretary-treasurer is Douglas Cone. Elected to the board of directors were George W. Ford, A. C. Bruce, Charles Zollman, Harold Price, Caroll Strohm, Werner Rosch, and Peter Verna, Jr.

ASCE honorary members

The American Society of Civil Engineers, at a meeting of its board of directors at the society's New York, N. Y., headquarters, elected five men to honorary membership, the highest distinction granted by the organization. The five are: George W. Burpee, Professor Albert Haertlein, Maj. Gen. Thomas M. Robins (U. S. A. ret.), Ole Singstad, and Professor Ralph B. Wiley.

With the exception of General Robins, all are former directors and vice presidents of the society.

Certificates of honorary membership will be conferred at the society's national convention in Pittsburgh, Pa., in October.

Consulting engineering firm appoints vice presidents

The Rochester, Pa., consulting engineering firm of Michael Baker, Jr., Inc., has appointed three new vice presidents. Don H. Graham will coordinate work on the firm's foreign projects. Frederick H. Awalt will remain in charge of the firm's Washington, D. C., office and will handle negotation of government and international contractual agreements.

The third vice president is Wayne D. Meyers. He was Pennsylvania deputy secretary of highways before joining Baker in 1942.

Samuel Morrow was appointed assistant vice president.

Bridge engineer joins staff of D. B. Steinman

Robert J. Prowse, former assistant bridge engineer of the New Hampshire Department of Public Works and Highways, has joined the staff of D. B. Steinman, consulting engineer. A professional engineer registered in Pennsylvania and New Hampshire and vice president of the New Hampshire Society of Engineers, Prowse has had many years' experience in the design of bridges and industrial buildings, and in the preparation of contract plans and specifications for single and multiple-span bridges.

During World War II, he served as a lieutenant with the U. S. Navy Bureau of Ships.

Woman engineer joins Arizona highways staff

The first woman engineer to be employed by the Arizona State Highway Department, Mrs. Frances Sprawls Walker, has begun an engineer-in-training program with the construction field office in Phoenix. During her in-training service period, she will serve in the state's nine engineering department divisions.

Consulting engineers elect first president

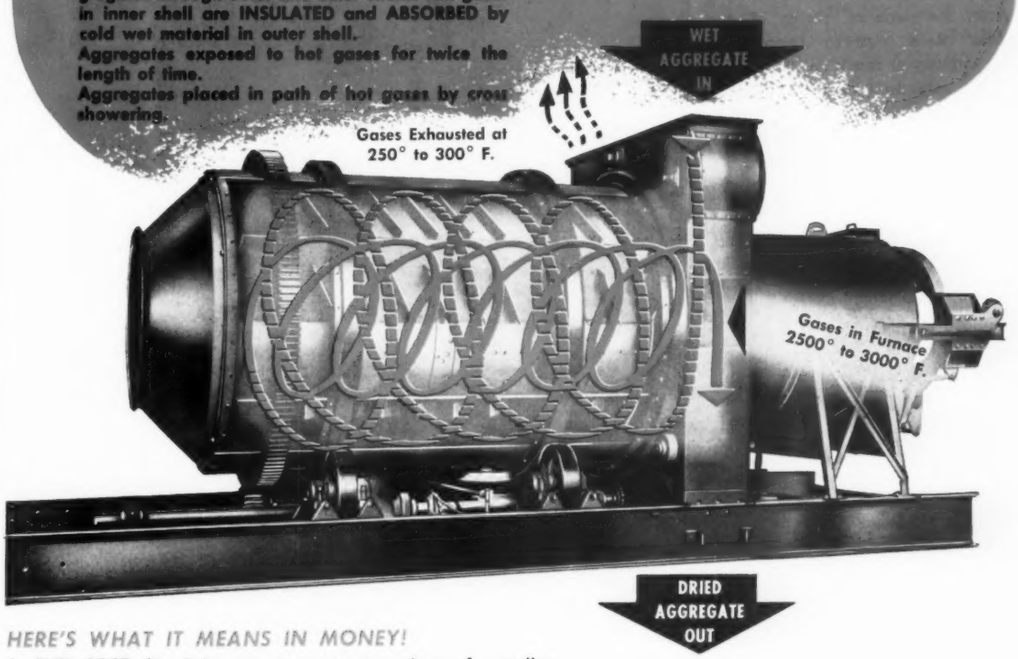
The newly formed Consulting Engineers Council has elected John K. M. Pryke its first president. He is the senior partner of Slocum & Fuller, a New York, N. Y., consulting firm.

A GAVEL made from the original oak steeple of the Old North Church, Boston, Mass., is presented to Wayne Richardson (right), president of the Overseas Press Club, by Robert F. Kane of F. H. McGraw & Co., New York, N. Y. Blown down by a hurricane in 1954, the steeple was rebuilt by the McGraw organization. The gavel, one of a few given to persons who helped in the restoration of the landmark, will become the property of the Overseas Press Club.

SIMPLICITY DRYER *SAVES FUEL!*

by reducing heat loss . . . Radiated and Exhaust Temperatures cut in half

HERE'S HOW! Red lines show flow of aggregates through outer and inner shells. Hot gases in inner shell are INSULATED and ABSORBED by cold wet material in outer shell.
Aggregates exposed to hot gases for twice the length of time.
Aggregates placed in path of hot gases by cross showering.



HERE'S WHAT IT MEANS IN MONEY!

1. FUEL COST: Simplicity operators report savings of a gallon of fuel per ton. $150.00 per day should pay your entire plant payroll.

2. REPAIR COST: Don't just figure the $10.00 repair part you buy; it might cost $10.00 or more to install it, plus an hour's down time, losing $500.00 or more of production. Simplicity of design and Dependability in operation saves big money in repair costs.

3. DURABILITY: Many Simplicity dryers have produced over 1,000,000 tons without wearing out or burning out.

Actual tests show these exhaust temperatures:

A typical single shell dryer	537° F.
SIMPLICITY Double-Shell Dryer	219° F.
Difference in stack loss	318° F.

The Simplicity Dryer uses the heat, saves fuel, saves labor and lasts longer.

THE SIMPLICITY SYSTEM
FROM BUILDER TO BUYER BETWEEN MEN WHO KNOW

THERE'S A SIMPLICITY PLANT NEAR YOU

On request, we'll be glad to send you the name and location of a nearby installation.

DEPENDABLE

THE SIMPLICITY SYSTEM COMPANY

RIVERSIDE DRIVE PHONE 2-2144 CHATTANOOGA 6, TENNESSEE

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VIBRATORY TAMPING

gives high density to storm-sewer backfill

One of the more unusual uses of vibratory compaction—in backfilling a storm sewer installed in a built up area of El Paso—worked so well recently that it was possible to place a bituminous pavement directly over the densely compacted backfill without waiting the customary period for settling to take place.

The new sewer on the four-lane divided street that carries U. S. 80 through the heavily populated eastern section of El Paso had been needed for a long time before funds were made available for construction. Years ago, when the street had been built, no adequate provision had been made for storm drainage. In the years following, businesses located on the street built up to a point where there was no longer any place for water to escape from the street. As a result, maintenance forces of the Texas State Highway Department had to pump as much as 100,000 gallons of water to dry up the low-lying areas each time there was a considerable amount of rainfall.

The installation of the storm drain, was done by T. N. O'Kelly, El Paso, a firm specializing in this work. The line had to be installed either on or alongside a fairly narrow concrete roadway on each side of the dividing strip, while between 30,000 and 35,000 vehicles used the thoroughfare daily. Adding to the difficulty was underground telephone conduit cable, carrying service for 10,000 phones, which lay practically alongside and above the level of one of the storm-sewer pipes.

Protect telephone lines

The O'Kelly firm, used to tough pipeline jobs, kept the work moving along despite these problems in trenching an average of 9 feet and to a maximum depth of 11 feet for the line. Aside from the reinforced-concrete storm drain pipe to be installed, the subcontractor had to install 50 reinforced-concrete manholes, one large collection manhole, and 53 assorted inlets for training storm water into the system.

A small truck-mounted Insley backhoe, handling a ⅜-cubic-yard bucket, made the excavation for the 1,126 feet of 15-inch reinforced-concrete pipe. An Insley crawler-mounted backhoe, with both ½ and 1-cubic yard buckets available, dug the larger trenches for the 5,213 feet of 18-inch pipe; 5,770 feet of 24-inch pipe; 4,753 feet of 30-inch line; and 30 feet of 48-inch pipe.

During this operation, the telephone coaxial cable was protected by an ingenious system of cantilevered hangers developed by the subcontractor. It consisted of 4×6 timbers, spaced at intervals of approximately ten feet, with heavy counterweights at their back ends at street level. Suspended from the cantilevered front end of each timber was a piece of angle iron that reached down and under the vitrified tile carrier holding the telephone cables. This system protected the telephone line against any danger from caving, since loose dirt could fall onto or past the carrier suspended from the hangers.

An Insley truck crane handled the reinforced-concrete pipe joints that were made in El Paso by Tellyer Pipe Co. of Texas. After the joints had been sealed with mortar, six inches of backfill was carefully placed over the pipe by Gardner-Denver portable

More proof that CAT* LOWBOWL Scrapers deliver bigger, faster loads

Handling tough material on the Florida Turnpike, a new DW21 (Series C) Tractor-No. 470 LOWBOWL Scraper averaged 128 pay yd. an hour on a 6900-foot round trip

Recent tests on the Florida Turnpike confirm previous reports from other jobs in Iowa, Kansas and New Jersey—the new Caterpillar LOWBOWL Scraper steps up production with bigger, faster loads. Here's proof again that on the job, where results and only results pay off, the new LOWBOWL design delivers a new high in money-making performance.

Says Donald R. Grubbs, Superintendent for Troup Bros., Inc., Miami: "I like the wide-base tires on this new DW21—they help us over this sandy fill. The new LOWBOWL Scraper design also cuts down our loading time. What's more, we've had very litt down time with our Caterpillar equipment."

Before you make your next bid, get the fu facts about the new LOWBOWL Scrapers. Yo Caterpillar Dealer's salesman carries completely doc mented details about their productive capacity o this and other jobs. Ask him to show them to yo

Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

CATERPILLAR

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tracto

BIGGER, FASTER LOADS WITH CAT LOWBOWL SCRAPERS

compressors and four Gardner-Denver pneumatic tampers. The remainder of the backfilling operation was handled by the Essick vibrating roller.

High densities achieved

The roller worked at high speed, making only five passes to compact 10-inch lifts of backfill material to an average density of 95 per cent. During most of this work, there was an adequate amount of mositure in the soil, but whenever additional moisture was desired, water was obtained from city mains, hauled to the street in a tank truck, and sprinkled on the soil before the trench was backfilled. The roller compacted the material so tightly that paving was done immediately without the usual time lapse required while the backfill settled.

All reinforced-concrete manholes were cast in place with field-manufactured, prefabbed forms, and truck-mixed concrete from the Mesa plant of Vowell Material Co., El Paso. In most cases, prefabricated drain outlets were used and as a result, congestion in the construction area was reduced.

This job, designed and administered under the general supervision of E. W. Mars, district engineer at El Paso, will free maintenance forces and maintenance dollars that would ordinarily be required for pumping the street clear of water after heavy rains.

THE END

Speedway Mfg. promotions

Two executive promotions have been made by Speedway Mfg. Co., a division of Thor Power Tool Co., Aurora, Ill. George R. Winkley is treasurer and assistant to the president, while William E. Sopusek is secretary. They formerly were production control manager and office manager.

Salem Tool appoints seven new executives

As part of its management-reorganization program, the Salem Tool Co., Salem, Ohio, manufacturer of earth and rock-boring auger drills, has appointed seven men to new executive positions.

J. H. Wilson, Jr., has been named works manager; George Adams, chief engineer; and Vincent J. McCarthy, sales manager. Kenneth Rogers will serve as office manager, Raymond Lowry as plant superintendent, and Donald Thomas as parts manager. Frank S. Painter is purchasing agent.

Prestressed concrete

■ Super - Tens, a high - tensile - strength wire for prestressed concrete, and other types of stress-relieved wire are described in a catalog from American Steel & Wire. The catalog tells how each is used, and the accompanying table lists complete specifications. End fittings for prestressing are discussed and diagrammed. Job photos show actual installation and various uses of the wire and strands.

To obtain Form 6577 write to American Steel & Wire Division, United States Steel, 1420 Rockefeller Bldg., Cleveland 13, Ohio, or use the Request Card at page 18. Circle No. 145.

Hydraulic scrapers

■ Three new catalogs devoted to Euclid hydraulic scrapers are now available. The booklets describe the Model S-7, which features a 7-cubic-yard struck capacity payload and a 143-hp engine; the Model S-12, which has a 12-yard struck capacity and a 218-hp engine; and the Model S-18, which carries 18 yards struck and is rated at 300 hp. Condensed specifications, action shots, and cutaway views of the parts are included in each catalog.

To obtain Forms No. 505, 506, and 507 write to Euclid Division, General Motors Corp., 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 36.

Tandem roller line

■ Specification sheets are now available on the new Huber-Warco line of tandem rollers. The 3 to 5-ton unit with torque converter and water-cooled engine features a towing attachment which converts the roller into a portable unit. The other models, the 5 to 8, 8 to 10, 8 to 12, and 10 to 14-ton units, also feature torque converter and two-speed transmission, according to the literature. Complete information is given on design, construction, materials, and capacities.

To obtain these specification sheets write to Huber-Warco Co., 202 N. Greenwood St., Marion, Ohio, or use the Request Card at page 18. Circle No. 40.

Goodyear promotes Moran

Robert Moran has been made manager of defense and new products sales by the General Tire & Rubber Co., Akron, Ohio. He joined the firm in 1936.

←For more facts, circle No. 209

RESULTS OF FLORIDA TURNPIKE JOB TEST

JOB AND LOCATION: Building 3.8 miles of new road on Florida Turnpike, near Hollywood. The job involves moving about 1,000,000 cu. yd. of sand. The contractor: Troup Bros., Inc., Miami. CONDITIONS: *Material*—very fine, loose white sand with an estimated shrinkage of 25%, borrow to compacted. *Loading*—D9 (Series D) Tractor with torque converter used for pusher. *Haul distance*—3250 feet over loose to damp, compacted sand, maintained by a No. 12 Motor Grader. Rolling resistance, 100 lb./ton. *Return distance*—3650 feet. *Grades on haul*—400 feet of 1°-3° adverse and 600 feet of 1°-2.2° adverse.

TIME STUDIES

AVERAGE	DW21-No. 470 LOWBOWL Scraper
Load time	.44 min.
Haul time	3.33 min.
Haul speed	11.14 MPH
Spread and turn time (180°)	.38 min.
Return time	3.37 min.
Return speed	12.31 MPH
Wait time	.39 min.
Total cycle time	7.91 min.
Trips per hour	7.59
Pay yd./trip	16.8
Production pay yd./hr.	128

REMARKS: The loose, fine sand was difficult material to load. In spite of this, average loading time was excellent, due to the fast-loading characteristics of the new No. 470 LOWBOWL Scraper. Average cycle time was excellent, too—a reflection of the new DW21's Turbocharged power and wide-base tires!

ew two-wheel Cat DW21-No. 470 LOWBOWL Scraper

ew four-wheel DW20-No. 456 LOWBOWL Scraper is o available. Both units have a capacity of 25 cu. yd. ped and 18 cu. yd. struck. Both feature the new rbocharged, 6-cylinder Caterpillar Engine which de- s 300 HP (maximum output) and 10% more rimpull. LOWBOWL design loads more material with less tance clear to the end of the loading cycle. And e-base tubeless tires, now standard equipment, elimi- e the major portion of down time caused by tires. these and other new features add up to bigger, faster s for you with Cat LOWBOWL Scrapers!

Softer rock is scarified by a Cat 28 ripper pulled by a Caterpillar D8 tractor before the scrapers move in. One of the Cat 80 scrapers, pulled and pushed by D8's, works in the background. *C&E Staff Photo*

Scrapers handle heavy rock excavation for new highway

Slashing through the rocky hills and dense hardwood forests of the eastern Ouachita Mountains, grading crews of McGeorge Contracting Co., Inc., Pine Bluff, Ark., carved out part of a beautiful new highway east of Hot Springs. Following the general alignment of the old State Route 88, the new road eliminates the sharp curves and steep grades common to the older routes in the area. Eventually, it will become part of a modern divided highway running from Hot Springs to U. S. 67 and 70, which leads northeast to Little Rock.

When construction is completed, there will be two 24-foot roadways, flanked by 10-foot outside shoulders and separated by a depressed median having a minimum 40-foot width and including two 6-foot inside shoulders. Where grade, alignment, or other conditions make it desirable, the median will be widened and, in some cases, developed into a park area.

McGeorge's work under the immediate program called for clearing and grubbing the entire 300-foot width of the right-of-way, and grading and giving a gravel surface to one of the roadways. Only one of the roadways was graded since the overall project is being constructed from current highway funds on a pay-as-you-go basis. In places where there is an excess of material, portions of the second roadway are being graded.

The grading job done by McGeorge on a 13.7-mile section beginning 2½ miles east of Hot Springs and extending east to the Garland-Saline county line, included bringing the roadway to a 50-foot subgrade top that will carry the 24-foot pavement, building 6 and 10-foot shoulders, and making shoulder slopes correspond to the depth of the base and pavement. Shoulder slopes of 4 to 1 or 2 to 1 terminate in a V-ditch both at the sides and in the median. Backslopes are 1½ to 1 or flatter in earth or soft rock and ¼ to 1 in hard rock. Any excavation in excess of that required to build the fills for the first roadway was used to bring the second roadway up to within 2 feet of finished subgrade. McGeorge, like other grading contractors, also placed 2 inches of gravel surfacing on the finished subgrade.

Tractor-saw clears timber

Clearing and grubbing the 385 acres of heavily wooded right-of-way through this country was a major job in itself. McGeorge made the operation almost completely mechanical so that hand work was cut to an

(Continued on page 18)

Everything moves in your favor...

EARTH...TIME...MONEY

The new, low cost, power packed combination

RIP ROCK FASTER WITH THE ATECO ROCK RIPPER AND THE IH TD-24 TRACTOR

Add ATECO (the job proven ripper) to the TD-24's tremendous weight and power, and you have a combination that shatters rock, shale and other hard-to-load materials into easy scraper-loading conditions.

This super-powerful team can transform many costly powder, truck and shovel rock jobs into economical scraper operations . . . cuts loading time and boosts payloads . . . saves scraper wear and tear.

MULTIPLY THE WORKPOWER OF YOUR IH TD-24 TRACTOR

With an ATECO ripper behind and International dozer in front, your tractor is complete master of the cut—ready to rip, pushload or bulldoze any time, anywhere. Ripper balances dozer weight for better traction, easier handling. Gets bigger loads faster, saves wear and tear on your scrapers . . . equip your tractor now with an ATECO Rock Ripper. Sold and serviced exclusively by your International distributor; call him today for demonstration, or write. Ask for Bulletin #IH-156.

Exclusive "Shattering" Action

Curved gooseneck shanks with replaceable rock-splitting points produce underground "live" action that rips out hard rock, shatters materials into easy-loading condition fast.

Works Anywhere Tractor Can Go

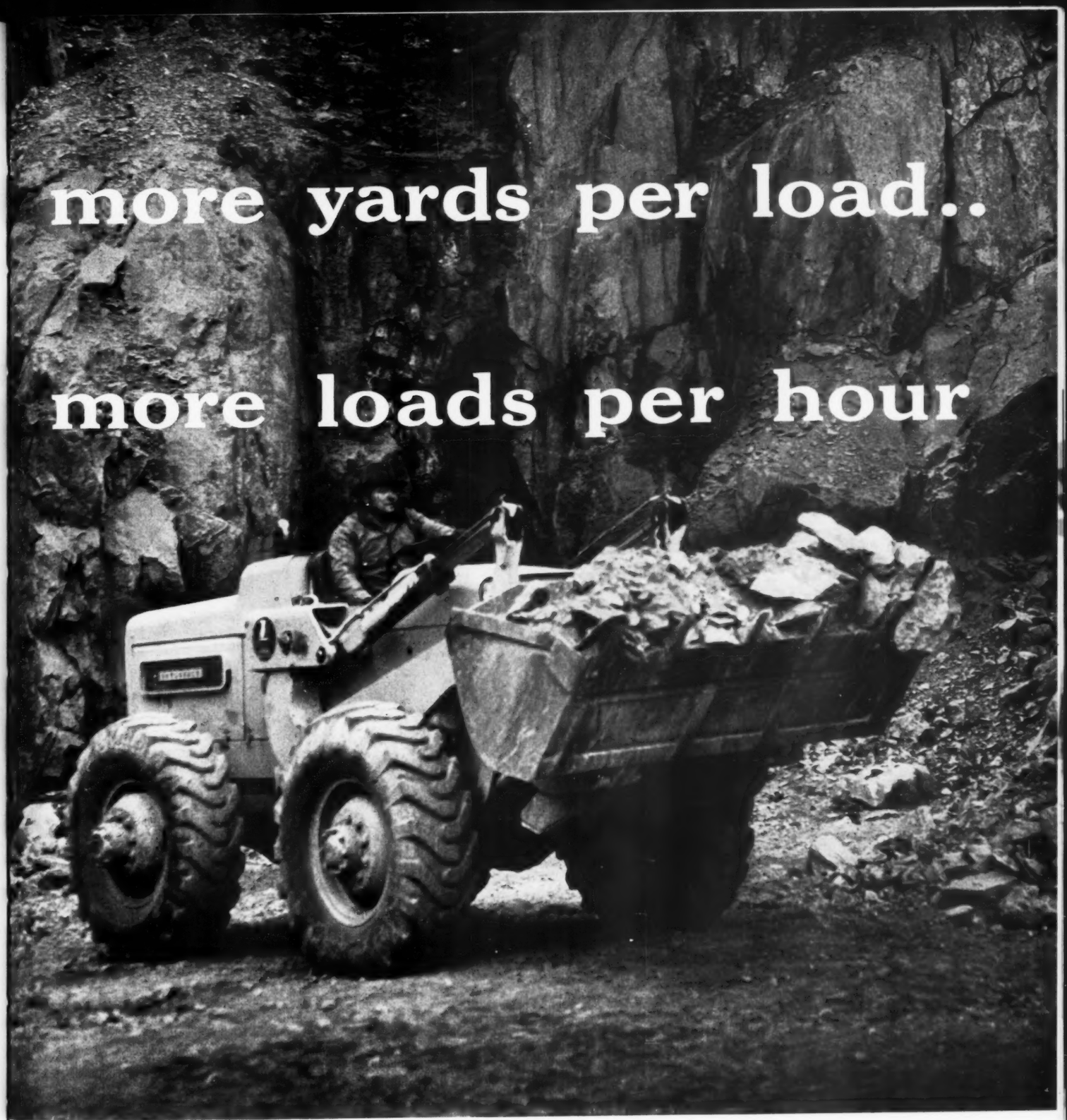
Compact, tractor-mounted; easy to handle in narrow cuts and tight spots. Swivel-mounted shanks pivot on turns for effortless steering.

GREENVILLE STEEL CAR COMPANY

ATECO DIVISION

Greenville, Pennsylvania

For more facts, use Reader-Reply Card opposite page 18 and circle No. 210



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GET MORE • A combination of powerful "pry-out" action using breakout pads as a fulcrum for leverage and a 40° bucket tip-back *at ground level* gets BIGGER LOADS with less spillage.

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DELIVER MORE • Since you get MORE to begin with and keep MORE while traveling at higher speeds . . . with less spillage in both instances . . . the result — you *deliver* more yards per load and more loads per hour.

You've never seen tractor-shovel performance like you get from the new 4-wheel-drive "PAYLOADER" units. They have everything that has proven desirable in tractor-shovel design, including new exclusive features: torque-proportioning differentials; no-stop power-shift transmission; powerful 40-degree bucket break-out action at ground level. They also have planetary final drives, hydraulic-system load shock absorber, power steer and other proven "PAYLOADER" features.

For proof of their superior productive capacity and performance, ask your "PAYLOADER" Distributor for a demonstration.

THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.

Send information on new "PAYLOADER" 4-wheel drive units (3 sizes up to 2¼ cu. yd.)

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MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 211

A tree falls before the V-shaped saw used with a Caterpillar D8 during the clearing operation. The big teeth along the bottom of the blade cut the tree off at ground level while the dozer-like blade pushes the timber over. *C&E Staff Photo*

(Continued from page 16)

absolute minimum. Three Caterpillar D8 tractors operating as a team did most of the work. One was equipped with a big V-shaped tree saw blade, and the other two had standard Caterpillar dozer blades. All were fitted with heavy canopies fabricated of steel pipe to protect the operators from falling trees or limbs.

The Cat with the tree saw simply edged the point of the big V-shaped saw blade up to a tree. Then as the Cat pushed ahead, the saw teeth cut the tree off at or below the ground. At the same time, the vertical dozer-like blade pushed the tree over away from the tractor. Timber fell as fast as the rig could move from one tree to the next and there seemed to be no limit to the size of trees this rig could handle. Timber up to 8 or 10 inches in diameter was usually felled in one pass. Some larger trunks required two or more passes, but even very large trees were soon toppled when repeated cuts were made on several sides.

Smaller trees and brush were cleaned out ahead of the tree saw by the other two tractors. These rigs also pushed the trees, brush, and stumps into piles on the right-of-way, where they were burned. One of the tractors was fitted with a rear-mounted stumping attachment, a device with a sharp hook that could reach down and cut the roots of exceptionally large or tough stumps. Another hook took hold below the ground and pulled the stumps out.

A small amount of hand work—in addition to that needed for starting and tending the fires—was required in places that were virtually inaccessible. In these areas, the workmen used a McCulloch chain saw to augment their hand tools.

While the entire 300 or more feet of the right-of-way was usually cleared of all trees, brush, and stumps, desirable trees were sometimes left standing in the median area. In one case, such trees were left for a center park development in an area 70 feet wide and 7,500 feet long.

Build pioneer road

Job conditions dictated the use of two spreads—one of rock-moving equipment, the other of earthmovers. The rock crew started on a big hard-rock cut near the east end of the project, while the scraper spread began moving dirt and softer rock at the west end. To enable service and fuel trucks to reach the rock cut and to service the clearing crew, the contractor had to build a service road almost the full length of the job.

The clearing crew followed available trails to build the road, breaking their way through hills and woods where no vehicle had penetrated to clear the trees and doze the trail into shape for the service trucks and pickups. Tractors working on the road started at the west end and worked their way east; they cleared the entire right-of-way on their return trip.

This service road was also used by the bridge crew that started construction of 21 box culverts and two major bridges at the time grading began. These structures, ranging from 4×6-foot singles up to 10×10-foot triple barrels—were built under a subcontract by Forsgren Bros., Fort Smith, Ark. The over-all length of one bridge is 100 feet; the over-all length of the other, 300 feet. In addition to the drainage structures built by Forsgren, the general contractor installed nearly 9,000 linear feet of concrete and corrugated metal pipe culverts.

Excavation is largely rock

Of the 1.1 million cubic yards of unclassified excavation in the project, more than 70 per cent proved to be rock ranging from soft sandstone and shale that was readily scarified by a ripper to hard limestone that had to be drilled and blasted.

Announcing the BIG, ALL NEW

SHAWNEE®

Chief

MODEL "D90" BACKHOE

Featuring Exclusive

PUSH PULL POWER

DIGS 14 FT. DEEP!

Another Shawnee exclusive — PUSH-PULL POWER! The top cylinder **pushes** on the Bucket Boom and the bottom cylinder is synchronized to **pull** . . . provides more digging power.

Digging is efficient to 14 feet — actual reach below surface is 15 feet.

★DIG DEEPER!
★REACH FURTHER!
★MORE POWER!

Ad-552

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1947 M N. TOPEKA AVE., TOPEKA, KANSAS

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A tractor-scraper spread began the grading at the west end of the job, where the material was largely earth and softer rock. In this spread were five Caterpillar D8 tractors pulling Cat 80 scrapers, and three additional D8's. One D8 served as a pusher, the second pulled a Caterpillar 28 ripper to scarify the rock, and the third—equipped with a front dozer and Esco scarifier—worked in both cuts and fills. A Caterpillar No. 12 motor grader did the finishing, and a Cat DW10 with a LeTourneau sheepsfoot roller compacted the fills.

In the softer layers of rock the Cat 28 ripper cut its two teeth into the shale about 10 or 11 inches on each pass. On some of the harder rock strata, the single tooth of the Esco ripper, which was attached to the dozer moldboard, seemed to do a better job of breaking up the rock.

By the time these softer rock materials were scarified, loaded, spread, and sheepsfoot-rolled, they broke down into reasonably fine particles that could be well compacted. To improve the density, however, the contractor mixed all available earth with the rock in the fills. The scrapers spread the materials in layers about 6 inches thick on the fills, and ample compaction was obtained by running the heavy equipment over the fills and using a sheepsfoot for rolling.

Building the road with easy curves and flat grades in this hilly country meant large cuts and fills with correspondingly long hauls and a large overhaul quantity. The tractor-scrapers made hauls up to 1,800 feet in building some of the big fills and rolled up 837,000 cubic-yard-stations of overhaul over the 1,000-foot free-haul distance.

The one particularly large cut in hard rock was drilled and blasted. After the clearing crew had removed the trees and brush, and scrapers had cut off the overburden down to solid rock, a group of Ingersoll-Rand, Gardner-Denver, and Chicago Pneumatic wagon drills—powered by Ingersoll-Rand Gyro-Flo 600 compressors—drilled the rock for blasting. In the maximum cut, which was 50 feet deep, it was necessary to drill and blast 40 feet of the material.

Since none of the rock from these cuts was suitable for the base, the contractor had to secure a total of 28,000 cubic yards of base material from a roadside pit. This amount of minus ¾-inch stone was required for the 2 inches of surfacing that had to be placed on the completed subgrade.

Equipment carefully serviced

It is a McGeorge policy that when equipment leaves a job, its condition is as good as when it arrived. Instead of running machines through a construction season and then bringing them into a shop for winter overhaul, this contractor keeps his rigs in top operating condition all the time. On this job, with the rigs working almost continuously in tough rock conditions, more than the usual maintenance program was dictated.

In addition to the daily servicing and regular mechanical maintenance

(Concluded on next page)

A LeTourneau sheepsfoot roller, pulled by a Cat DW10 tractor, breaks up rock and compacts the fill, while a Cat D8 and 80 scraper unload a 6-inch lift of material. The heavy equipment aided in the compaction work. *C&E Staff Photo*

LIPPMANN *Rock Ram* *Jaw Crushers*

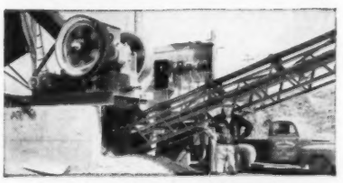
30x36 Rock-Ram crushing plant in Ohio includes Lippmann feeder, conveyors, screens, pulverizer and bins.

IT'S THE BEST CRUSHER INVESTMENT I'VE EVER MADE...

"We have operated our Lippmann Crushing Plant for almost a year now and your 24x36 Rock-Ram jaw crusher mounted on it is a real rock breaker. It requires practically no attention, uses little power and will take all we can give it and more. It's the best crusher investment I've ever made."

(signed)
WILMER GERDES,
owner
GERDES QUARRY,
Dixon, Ill.

10x36 Rock-Ram crusher in a stationary crushing plant in Illinois. Also includes Lippmann feeder, conveyors and screens.



20x36 Rock-Ram mounted on primary plant with feeder and conveyor, in an Illinois pit.

Mr. Gerdes' praise of his Lippmann Rock-Ram is typical of the pride voiced by Rock-Ram owners everywhere. And with good reason — for each has a machine that, pound for pound, is the strongest crusher built. And better than this are other Rock-Ram advantages . . . heavier flywheels and greater crushing-stroke eccentricity to give more impact and bigger bite for greater production and lowest power usage . . . larger shaft and oversize roller bearings that assure longer uninterrupted service with less chance of the shaft and bearing failures that makes ownership of ordinary crushers so expensive. The feed opening is specially engineered larger with size measured at the closed stroke of the eccentric instead of the open. This gives Rock-Ram owners the added bonus of a greater-than-specified opening size.

The Rock-Ram owner also knows that his crusher has many of the same superior crushing advantages of the famous Lippmann Grizzly-Kings — but at Rock-Ram's lower cost. Small wonder that Mr. Gerdes says, "It's the best crusher investment I've ever made."

Rock-Rams are made in sizes 10" x 16" to 30" x 36". Bulletin 1111 contains full information on these superb crushers. Contact your Lippmann Distributor, or write to Lippmann Engineering Works, 4637 W. Mitchell St., Milwaukee 14, Wis.

1111–56–4

LEW **LIPPMANN**
SINCE 1923
CRUSHERS FEEDERS SCREENS CONVEYORS CRUSHING & WASHING PLANTS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 213

In the cleared 300-foot-wide right-of-way, a Bucyrus-Erie 15-B backhoe excavates for a culvert, which is being built under subcontract by Forsgren Bros., Fort Smith, Ark. Some trees were left standing in the wide median.

As a Cat No. 12 motor grader shapes and finishes a backslope, some of the shale that has been scarified is loaded out by a Cat D80 scraper and D8 tractor.

C&E Staff Photos

Compaction at its Best!

Southwest Model C-75 with DW-21 "Cat" on Dam Project in the West.

Southwest Model C-25 with D-6 "Cat" in Structural Backfill on Southern California Freeway Construction.

Southwest Model C-50 with "C" Tournapull on Large Housing Project.

Southwest Model C-15 with D-4 "Cat" on Highway Job.

Structure Backfilling

Frequently neglected places are the restricted backfill areas around structures, such as abutments and similar spots. The smaller sizes, Models C-15 and C-25 of Southwest Heavy Duty Compaction Rollers, can work in close quarters and produce low-cost compaction.

On a recent State of California freeway contract a Southwest Model C-25, working on 10-inch sand lifts close to the concrete structure, developed 98.5 average modified AASHO densities in only four passes. The contractor was able to increase the yardage placed per shift by several hundred percent over slower hand and vibratory methods of compaction.

Kneading action of the backfill material by the Roller tires and the ponderous weight of the Roller produce maximum compaction results.

Speed and Mobility

In earthmoving, the trend is to faster travel and unloading, particularly on large projects requiring the placing of big yardages per hour.

Equipment must of course be operated with a high degree of coordination—Southwest Heavy Duty Rollers teamed up with present day wheel type tractors can follow closely behind the earthmovers and maintain job efficiency.

For movement from job to job, where conditions permit, the Southwest Roller with its large tires, and ballast removed, can be quickly and readily moved over highways.

Large Yardages

The present-day projects with big quantities of earthfill to place and compact must have large hourly production.

Southwest Heavy Duty Rollers handle thicker lifts than Sheepsfoot Rollers, and with fewer passes.

Lifts 12" to 18" are not uncommon with resulting yardage several times greater than obtainable with Sheepsfoot Tampers or other slow-moving compaction equipment.

Fill conditions—soft spots, stones and boulders—are easily overcome without interference to operations. The patented independent vertical oscillating weight boxes and constant, uniform wheel load pressures assure uniform compaction at all times.

The result is time savings and lower costs with larger yardages.

Lower Maintenance Costs

The Pneumatic-Tired Roller will give lower maintenance costs per yard of production than other types of compaction equipment.

The few moving parts and long-life tires on Southwest Rollers keep maintenance costs at a minimum. Other items of equipment, particularly Sheepsfoot Tampers with feet to be replaced, have greater unit costs due to numerous wearing parts.

Interchangeable With All Tractors

Southwest Heavy Duty Compaction Rollers can be teamed up with all crawler type tractors and practically all wheel type, off-the-highway tractors.

For crawler tractors with standard drawbar, our standard goose-neck type draft beam is supplied.

For the wheel type tractor the properly engineered draft beam is available for this combination.

Versatile Application

The range in sizes (15- to 100-ton) in Southwest Rollers will cover most all earthfill compaction jobs, from housing projects, highways and airfields up to the largest of earthfill dams.

Another feature, particularly valuable on levees and steep embankments, is the ability to operate without tipping over, as compared with the ordinary type Pneumatic-Tired Roller, should the outside wheel run off the edge of the fill.

Write for Complete Information

SOUTHWEST WELDING & MANUFACTURING CO.

Construction Machinery Division

ALHAMBRA, CALIFORNIA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 214

(*Continued from preceding page*)

handled by special crews, a continuous campaign for careful equipment operation was carried on by the supervisory staff. Careful operation of equipment was stressed in every conference between the superintendent and any of the foremen. This admonition was made so frequently during the day that it could not be ignored.

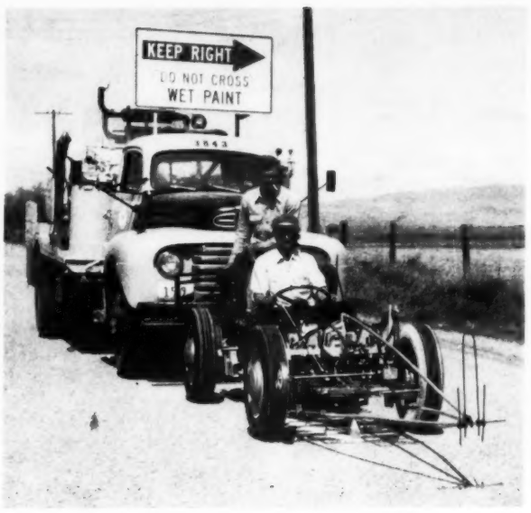
The foremen, on their part, kept passing the word along to equipment operators. If a workman stopped for a drink, his foreman was likely to call attention to the importance of careful equipment operation. Every opportunity was used to remind every operator to take it easy and take care of his machine. And since safe operation and careful operation are practically synonymous, the campaign served the dual purpose of safeguarding the workmen and the equipment.

The thorough daily maintenance and servicing of each piece of equipment was handled by a two-man lubricating crew with a specially equipped lube truck. In addition to a supply of fuel and lubricants, the Ford F-6 truck carried a DeVilbiss air compressor and a Kohler electric generator. An electric fuel pump was arranged to pump either into or out of the supply tank on the truck. Hand guns were used for the lubrication. As this crew made the rounds, it stopped each rig and serviced it with fuel, water and lubricants.

A field repair shop handled all types of repair and maintenance operations right on the job. Worn or damaged parts were replaced with new parts to keep the equipment in as near perfect condition as possible.

To complete the $710,000 job in the required 250 working days, the contractor worked a single crew ten hours per day, six days a week. The job, carried on right through last winter, was completed several weeks ago.

Supervising the entire project for McGeorge Contracting Co. was Vernon Smith. The Arkansas State Highway Commission, which planned and supervised the project, had John Tallent as resident engineer on the project. Construction engineer for the department is E. E. Mashburn. Ward Goodman is chief engineer, and Herbert Eldridge, director of highways for the state. THE END



◄ This rig, developed by the Idaho Department of Highways, has simplified the painting of "line curves" or "snake stripes" ahead of stop signs. The rig is attached to the paint cart by two pins. As it travels along the center line of the roadway to a target, the paint gun moves laterally across the front of the unit.

Socony Oil grants five engineering scholarships

Five highway-engineering scholarships have been established by the Socony Mobil Oil Co., Inc., New York, N. Y., for deserving and needy junior and senior engineering students.

Grants of $500 each for the 1956-57 academic year have been made to Tufts University, Medford, Mass.; Pennsylvania State University, University Park, Pa.; Kansas State College, Manhattan, Kans.; Iowa State College, Ames, Iowa; and the University of Minnesota, Minneapolis, Minn.

A member of the Asphalt Institute, Socony established the scholarships as the first of several expected from Institute members.

Idaho highway department develops striping unit

A new unit for painting the "snake stripes" or "line curves" a short distance ahead of stop signs has been developed by the Idaho Department of Highways. Light in weight, the unit is attached to the paint cart by two pins and can travel along the center line of a roadway. The paint gun moves laterally across the front of the unit.

Made largely of aluminum the unit is driven by one of the paint cart's front wheels. It is remote-controlled

by the cart operator. The paint gun is moved along the gun carrier by a worm and gear ballcrank and a sliding link attached to the carrier.

Forward speed of the machine has been increased from 3 to 8 mph, and working time has been reduced by 15 minutes per section over former methods. Previously, two men moved ahead of the unit to spot the centerline of the roadway to be marked. A 500-foot string, knotted at 5-foot intervals, was then stretched along the center line and an 8-inch offset used at alternate right and left intervals at these knots to provide the pattern. The new unit now requires that the center line location be determined, a target set at the far end, and a starting point marked off.

Credit for the design of the unit goes to Fred Jacobson, a machinist. Right now, the department is working on a simpler version of the machine and is considering its use with an air injection unit that will blow glass beads into the paint.

C&D Movall

What's so special about the Movall?

Hauling granite rock, normally considered an end-dump job, is easy for Movall Rock-Wagon.

1. **Positive ejection**
2. **Does work of both an end-dump and a bottom-dump**
3. **Can spread "on the fly," like a scraper**
4. **Handles any top-loaded material**

Why tie up money in single-purpose end-dumps or bottom-dumps when Movall Rock-Wagons do the work of both—and give you the further advantages of spreading and positive ejection? Movall's unique design (see diagram below) pushes out rock, dirt, mud, gumbo, frozen earth or ore—any material you can top load.

If you now own rubber-tired tractors (2 or 4-wheel, any make, any size) and scrapers, simply interchange Movalls for scrapers and you're equipped for any top loading job regardless of material, or how and where you want to dump it.

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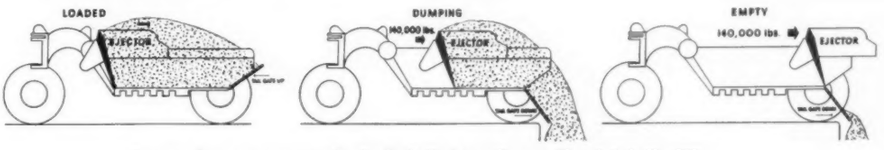
10 HOW IT WORKS



For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 319

Steel templates used to place pier anchors

They help align assemblies in footings for new approaches to Queensboro Bridge

With the anchor assembly suspended over the footing by means of lines lashed to the template, workmen slide the falsework into position. The falsework will rest on the wooden caps which have been placed over the form studs on both sides.

Steel templates fabricated in the shop of the general contractor were used and re-used to place anchor frames and bolt assemblies in the footings for several new approaches to the Queensboro Bridge over the East River in New York City. The templates were made of channel steel pieces welded together.

Terry Contracting, Inc., New York City, is the general contractor for the construction and reconstruction of the approaches to the Manhattan-Queens bridge on the Queens end, a $5¼ million contract. The entire project, costing somewhat more than $7 million, will also include new approaches on the Manhattan side and a new, second, two-lane roadway on the north side of the upper deck of the 47-year-old cantilever span.

Footings were excavated by the Bern-El Construction Corp., Amityville, N. Y., and H. Johnson & Sons, Inc., Flushing, N. Y., drove the H-beam piles to bed rock. The Eddystone Division of the Baldwin-Lima-Hamilton Corp., Philadelphia, Pa., is fabricating the steel for the entire project.

Steel templates

The steel templates were notched with center line markings, and bolt holes were geometrically marked off and drilled, assuring perfect alignment of the anchor bolts. Template, frame, and bolts were assembled at the footing site.

In preparation for the placing of an anchor assembly, carpenters constructed a falsework frame, consisting primarily of 2×8's bridged on edge, to support the anchor assembly. The falsework was supported in the forms in one of two ways. In some instances, wales or cleats were nailed to the inner walls of the form just above the concrete level, and the falsework was supported on them. In other cases, the form studs were capped with wood beams, and the falsework rested on the beams.

The latter method was used when nothing could be nailed to the forms or the studs.

A Lima ¾-yard truck crane was used to lower the anchor assembly into the form. With the assembly on the hook suspended over the form, the falsework was slid into place between the two rows of bolts, and between the template and the anchor frame. Lowering continued until the falsework was secure on its supports, and the template was riding on the

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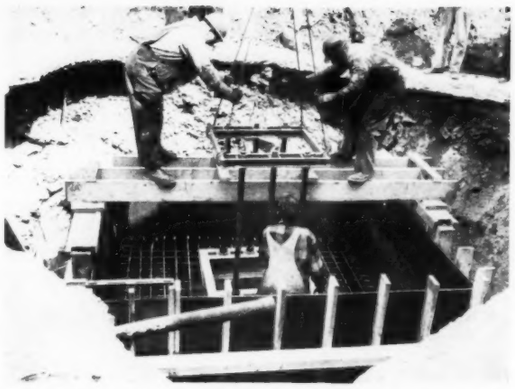

The falsework in place, the anchor assembly is lowered into position. The re-usable steel template will ride on the bridged 2 x 6's with the anchor assembly suspended below it, just clearing the wire reinforcing mat.

Carpenters adjust the anchor assembly by means of wedges hammered between the template and the footing piling. In this footing, the falsework rests on cleats nailed to the sides of the form, just above concrete level.

falsework with the anchor bolts and frame suspended beneath.

At this point, elevation, leveling, and proper relationship to the footing center lines were checked. Wooden wedges were used under the template, under the falsework, and between the footing piling and the template to make the necessary adjustments. Positioning was double-checked with opposite and adjacent footings and with diagonally-opposite footings.

Concrete

Concrete for the footings was supplied by B. Turecamo Co., Inc., Brooklyn, N. Y. On most of the pours, Turecamo used an Adjusta-Wate 8-yard mixer mounted on a Mack truck and poured right to the forms. Immediately after the concrete was placed, the positioning of the anchor assembly was rechecked, to detect any possible shift that might have taken place during the pour.

Terry Contracting Inc., placed the anchor assemblies and will handle all the steel erection on the job. Superintendent and chief engineer for Terry is William Mayhew. Parsons, Brinckerhoff, Hall & Macdonald, New York City, is the consulting engineer for the project, which is under the authority of the Bridge Division of the City of New York, Department of Public Works. S. Mandeberg is resident engineer.

THE END

Expect Sao Paulo subway to cost $50 million

Brazil's Sao Paulo—one of the fastest growing cities in the world—has plans for a $50 million subway, the first stage of which will consist of 20 miles of track, part of the line underground.

Plans for the subway were made public by Dr. Miguel Badra, a leading Brazilian architect, who recently completed a month's inspection tour of U. S. highways, public works, and traffic facilities with a delegation from the Mayors Association of the State of Sao Paulo. Equipment for construction of the new subway is expected to be supplied by U. S., Swiss, or French firms, financing terms determining the choice of supplier.

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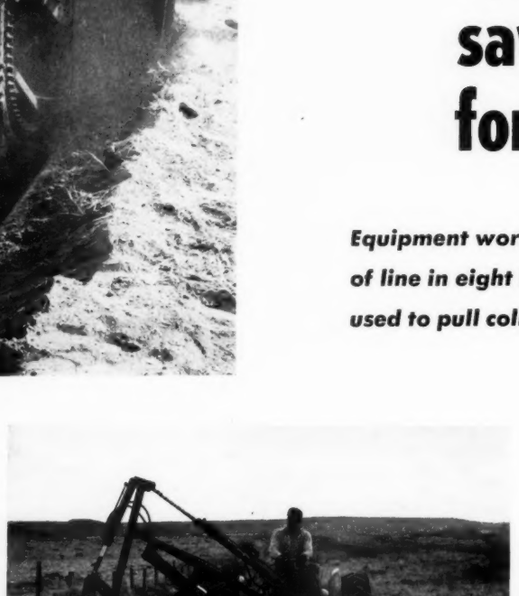
For more facts, use Reader-Reply Card opposite page 18 and circle No. 215

Air-operated device saves used pipe for new water line

Equipment works swiftly, salvaging a mile of line in eight hours; 8,000-pound force is used to pull collars without damaging pipe

by RAY DAY

The plow, above at right, mounted next to the endless bucket chain of the Gar Wood Buckeye trencher, uncovers backfill over the old pipeline. At right, a section of line through caliche is uncovered by a Ford-mounted Sherman back digger.



The line uncovered, the special collar-pulling unit disconnects every other collar on the pipe. The machine is handled by the Superior side boom on the International tractor. Air is supplied by an air compressor towed by the tractor.

The disconnecting device, designed by Ramsey Enix, co-owner of the contracting firm on this job, and built by Allison Welding & Machine, Amarillo, Texas, has four sets of steel fingers that grip the pipe while an air ram and puller slip the collar along the pipe.

Air-operated pipeline machinery developed by Ramsey Enix, one of the co-owners of Brodie Construction Co., Amarillo, Texas, surpassed performance expectations during the salvage and re-laying of 14 miles of Johns-Manville 10-inch Transite water line near Vaughn, N. Mex., earlier this summer. In one day, the equipment disconnected the Transite collars without damaging them, salvaging a mile of line in 8 hours. On reassembling and re-laying, the equipment did even better, completing 6,458 feet of line in 7¾ hours in the first day of this operation. A patent for the equipment has been applied for and a patent number issued.

The speed of this new equipment, in sharp contrast to the hand-winch method used for handling cement-asbestos pipe, was particularly valuable, since the Brodie firm had to complete the 14-mile salvage and re-laying job in a 30-day construction period.

During this time, the Transite line from the Bonita water supply of the Southern Pacific railroad to Vaughn had to be salvaged, since the Southern Pacific wished to discontinue the water commitment, and relaid between Vaughn and Negra, N. Mex., about 20 miles distant. The new line is the result of an agreement worked out between the Southern Pacific, the village of Vaughn, and the Santa Fe railroad, under which the Santa Fe will furnish both Vaughn and the Southern Pacific with water. The water supply at Negra, at elevation 6356, drops by gravity to a 400,000-gallon steel reservoir at elevation 6009, then flows to elevation 5950 at Vaughn.

When the job on the 1,200-gpm-capacity line started, Brodie Construction Co. took steps to minimize inconvenience for the 1,500 residents of Vaughn during the 30-day con-

(Additional photo on cover)

A Gar-Wood Buckeye 314 ditcher excavates a trench next to the old pipeline to expose one side of the pipe, while an attachment uncovers the top of the line. The rig dug up to a mile a day on this 14-mile job.

struction period that water had to be shut off. While the water pressure was still on, Brodie uncovered 6 miles of the line and also made sure that every municipal storage area was filled to the brim. To supplement this supply, water was hauled to the village in railroad tank cars, under the joint cooperation of the Santa Fe and the Southern Pacific, during the work.

Salvage rate high

As important as speed on this project was the amount of line that could be salvaged for re-use. Salvage of Transite pipe is always a risky job when the hand-winch method is used, according to general superintendent C. B. Grim, because it results in excessive collar and pipeline breakage. Specifications for the Vaughn job, prepared by W. Carlos Powell, Santa Fe engineer, limited breakage to 2½ per cent, but the powerful new equipment handled pipe so delicately that pipe breakage was nil and collar breakage came to less than half of 1 per cent. The 10-inch Transite pipe salvaged from the old 14-mile line, plus 6 miles of new 6-inch Transite pipe were enough for the 20-mile line to Negra.

Uncovering the Transite line was difficult, because when the Southern Pacific laid the line in 1950, not too much care was exercised to make the trench uniform. As a result there are many jogs in the alignment of the line, which runs anywhere from 6 to 30 inches beneath the ground. Getting at the pipe, some of which had been backfilled with chunks of rock 18 inches in diameter where caliche and limestone had been excavated, called for some inventiveness on the part of the contractor.

Stripping difficult

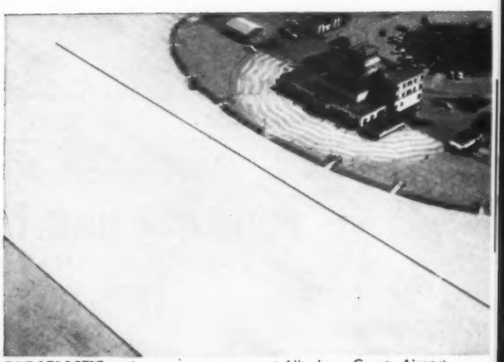
A Gar Wood Buckeye 314 ditching machine, its buckets equipped with H&L teeth, was brought in to dig a trench practically alongside the old line. Meanwhile, Ramsey Enix and the field superintendent and ditch foreman for Brodie were working on a piece of equipment that would make it possible for the old pipeline to be stripped and the main ditch excavated simultaneously.

Working together, the men devised a plow that was outrigger-mounted to the frame of the Buckeye machine. When the Buckeye started operating, the plow swept the dirt lying over the old line into the main ditch excavation, so that stripping and trenching could be done at one time by the Buckeye. On good days, the equipment made about a mile a day.

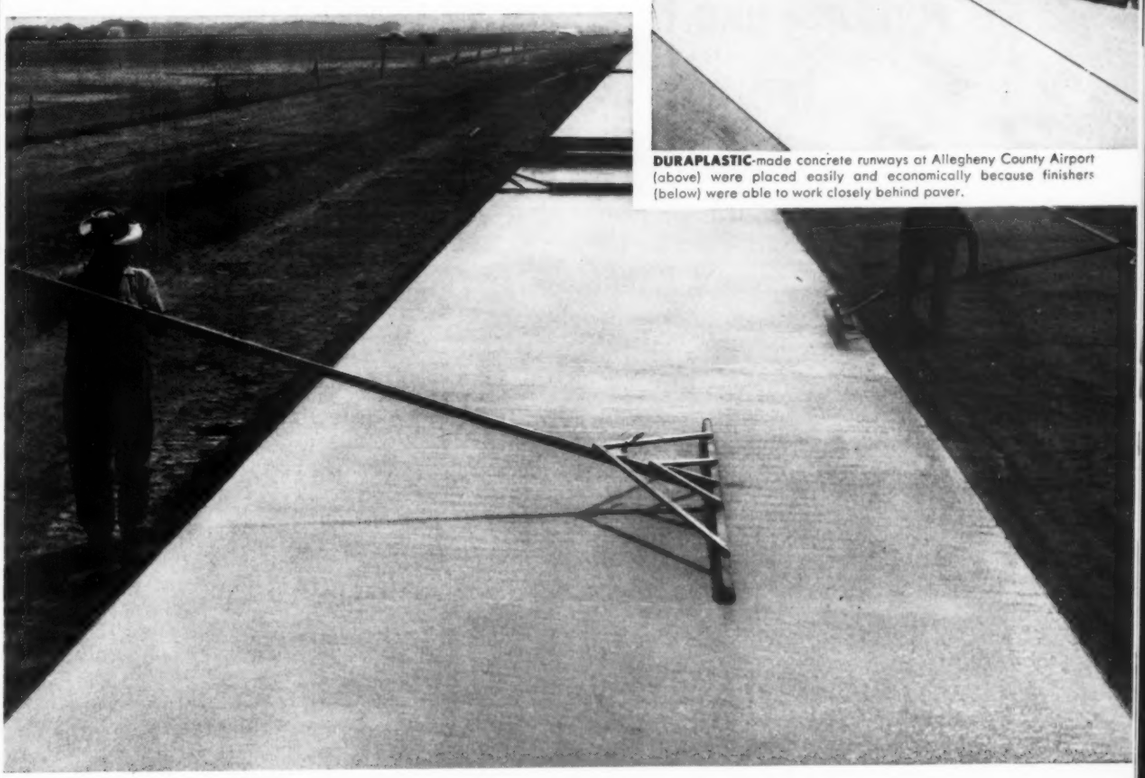
In places where the old ditch had been backfilled with caliche that had since set up, a pair of Ford tractor-mounted Sherman backdiggers excavated down to the old pipeline. Hydraulically controlled and operated,

(Continued on next page)

Why is this better concrete?



DURAPLASTIC-made concrete runways at Allegheny County Airport (above) were placed easily and economically because finishers (below) were able to work closely behind paver.



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"For a fast paving job on the lengthy Allegheny County Airport runways, we used Atlas Duraplastic cement for better workability and placeability," says Mr. Anthony A. Benintend, Vice President, Ben Construction Co., Pittsburgh, Pa.

Mr. Benintend and many other contractors have found out for themselves that Atlas Duraplastic air-entraining portland cement minimizes bleeding and segregation in concrete mixes, allowing finishers to work closely behind the paver. And, with Duraplastic, the finished concrete is fortified against the effects of freezing-thawing weather and scaling caused by de-icing salts, and provides greater durability.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 216

(*Continued from preceding page*)

In hard going, where the old line has been backfilled with broken rock, an International TD-14 tractor uses a hydraulic Bucyrus-Erie bullgrader blade to expose the pipeline.

each of these small, mobile units stripped about 350 to 500 feet of line per shift.

The Buckeye also skipped places where the line had been backfilled with large pieces of broken rock so that an International TD-14 tractor with a hydraulic Bucyrus-Erie bullgrader blade could handle the work. The line is exposed by hand digging every 100 feet. The machine operator crowds the down pressure on his blade about a foot away from the pipe, then raises his blade to clear the pipe as he goes over the top. So skillful is this man that he can safely repeat the blade dip on the other side, leaving a scalloped effect that exposes the pipe perfectly.

After stripping has been completed —by any of these methods—a small labor force spaded shallow holes at spacings that allowed the pipe-handling tongs to grab and salvage pipe in 26-foot joints. One collar and its two rubber gaskets were left in place in the center of each 26-foot section.

The final step in stripping was to pick up the pipe gently with a set of mechanical tongs and shake it to dislodge dirt. This operation raised the line a few inches so that it was more accessible to the special equipment that followed. The mechanical tongs used in this operation, also designed by Ramsey Enix, grab the pipe and hold it in one position once a key has been set. In good terrain, these tongs were handled by a Dodge Power Wagon and hoist; in tougher going, an International TD-9 or TD-18 handled them with a Superior side boom.

Special tongs pull collars

The air-operated equipment designed by Ramsey Enix for pulling collars on the old pipe consists of four sets of steel fingers, operated by air rams, that gripped the pipe tightly on each side of the collar; a side-acting air ram and puller that slipped the collar laterally along the pipe; and an air ram for positioning the device. Built by Allison Welding & Machine, Amarillo, under the supervision of Ramsey Enix, the device is mounted on a steel frame. The weight of the device was carried on the side boom of a Caterpillar or International tractor. Air hose, equipped with rapid and positive opening valves, connected the air rams to the various parts of the machine and permitted the rams to be operated by two men on the ground. A Jaeger 125-cfm air compressor that powered the rig was towed along by the tractor.

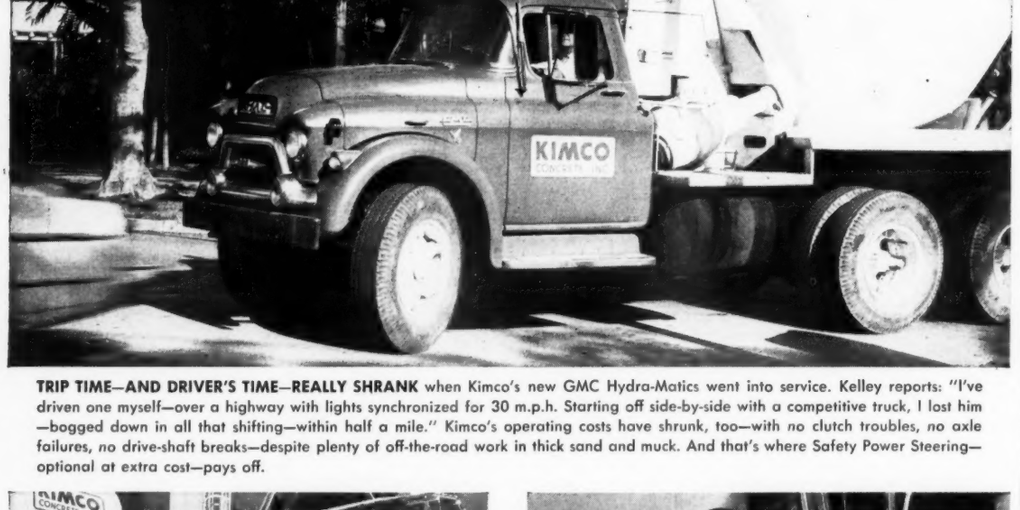
This combination was able to pass through all but about 500 feet of the toughest terrain during the 14-mile salvage job. In the 500-foot section, hand pullers were used and collar breakage was high.

Because the rubber gaskets in the existing pipe had been rolled in as the collars were pressed on under great force six years before, they had flattened into an elliptical shape. No chances were taken in reassembling the collars for the new line: the air-operated machine slipped the collar entirely in the clear, the two rubber gaskets were discarded, and new gaskets were substituted for the old ones when the line was reassembled. If the flattened gaskets had been used, they might have rolled unevenly. A leak would be almost certain to develop in the new line, and leakage tolerances are only 50 gallons per inch of diameter per 24-hour period per mile of line under 250-psi test pressure.

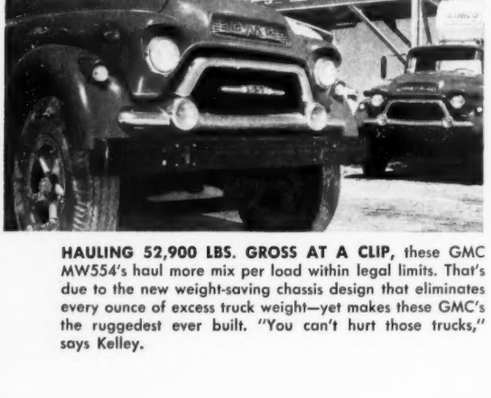
After pipe had been salvaged, the 26-foot joints were picked up by a set of mechanical tongs similar to

"Nothing like them for hauling 26-ton loads through busy Miami streets!"

—says Kent Kelley of Kimco Concrete, Inc., Miami, Florida, about his new GMC Hydra-Matic* tandems



TRIP TIME—AND DRIVER'S TIME—REALLY SHRANK when Kimco's new GMC Hydra-Matics went into service. Kelley reports: "I've driven one myself—over a highway with lights synchronized for 30 m.p.h. Starting off side-by-side with a competitive truck, I lost him —bogged down in all that shifting—within half a mile." Kimco's operating costs have shrunk, too—with *no* clutch troubles, *no* axle failures, *no* drive-shaft breaks—despite plenty of off-the-road work in thick sand and muck. And that's where Safety Power Steering—optional at extra cost—pays off.



HAULING 52,900 LBS. GROSS AT A CLIP, these GMC MW554's haul more mix per load within legal limits. That's due to the new weight-saving chassis design that eliminates every ounce of excess truck weight—yet makes these GMC's the ruggedest ever built. "You can't hurt those trucks," says Kelley.

"I GET MORE OF WHAT I WANT IN GMC's — no matter how you compare them with competition," Kelley claims. "There's more power from that 210 h.p. V8 — better load capacity—easier driving—and all with much lower operating costs. I predict that most every truck in the country will be a Hydra-Matic within the next five years."

**Hydra-Matic standard on some models; optional at extra cost on others*

GMC TRUCK & COACH—*A General Motors Division*

For more facts, use Reader-Reply Card opposite page 18 and circle No. 217

F. Wayne Laws, representing W. C. Powell, engineer for the village of Vaughn on this job, examines the mechanical pipe tongs designed by Enix for picking up and laying the pipe. The pipe-salvaging operation was simply reversed for laying the pipe.

those used in freeing the pipe of loose dirt. The device was centered over the collar at the center of the joint so that no bending stresses would be set up in this part of the pipe. A Cat D4 with side boom or, in better terrain, the Dodge Power Wagon, loaded the joints onto a flat-bed truck to be hauled to the new location. Here, the line was strung, brushed clean and dry, and made ready for reassembly by air-operated pipe tongs. These tongs were similar to those used in the collar-pulling process; the process was simply reversed in the reassembly operation.

New ditch is easier

The excavating of the trench for the new line was easier than excavating to salvage the pipe. The engineering consultants chose a location that runs over terrain varying from level land to rolling country—principally clay topsoil and soft caliche.

In all but the few spots where caliche was hard, a Cleveland 240 ditching machine excavated the trench. A Caterpillar D7 tractor with dozer smoothed a path ahead of the trenching machine, using a Kelley hydraulic ripper in spots where caliche occurred as cap rock. After the ripper gouged this rock loose, the tractor smoothed the path for the ditcher. The D7 was also used for backfilling and final dressing work after the line had been re-laid.

In places where caliche was hard, two jackhammers, operated from a Jaeger 125-cfm compressor, put down powder holes. Finish mucking was done by a Sherman backdigger.

With this job a success, Enix is waiting to try an air-operated machine he has developed for laying or separating concrete pipe joints. Self-propelled, it carries its own compressor and rolls over the top of the pipe on rubber tires. Enix expects to put this to use on some $3½ million worth of contract work scheduled to be done by the Brodie firm this summer for the city of Alamogordo, N. Mex., and for nearby Holloman Air Force Base.

General supervision of field work for Brodie was done by co-owners Jake Brodie and Ramsey Enix. C. B. Grim was general superintendent, and Roy Wells was assistant in charge of pipe salvage and ditch work. Representing engineer W. Carlos Powell for the village of Vaughn was F. Wayne Laws, engineering assistant.

THE END

Port Authority completes driving third Lincoln tube

Tunneling operations for the third tube of the Lincoln tunnel were essentially completed little more than a month ago, when the final ring of the outer shell was bolted during a special ceremony attended by Governors Robert B. Meyner of New Jersey and Averell Harriman of New York.

Running between midtown Manhattan and Weehawken, N. J., the new tube is expected to be in full operation next year, permitting a 50 per cent increase in traffic using the Lincoln tunnel.

Parallel to and south of the existing tubes, the third tube is 8,013 feet long from portal to portal, has a 31-foot external diameter, and 13 feet of headroom. The roadway will measure 21 feet 6 inches wide.

Pouring concrete, placing tile, and installing lighting facilities are some of the jobs that remain to be done. Costing $100 million, the new tube is being built by the Port of New York Authority.

PCA organizes new fire research group

The Portland Cement Association has formed a fire research section which will investigate the fire resistance of concrete and concrete structures. The new section will be housed at the organization's research and development laboratories in Skokie, Ill.

Clifford C. Carlson will head the group.

AT LEAST McNERNY'S SURE OF GETTIN' HIMSELF BACK HERE!! THOSE SUBSTITUTE PARTS LEFT HIM STRANDED AGAIN YESTERDAY!
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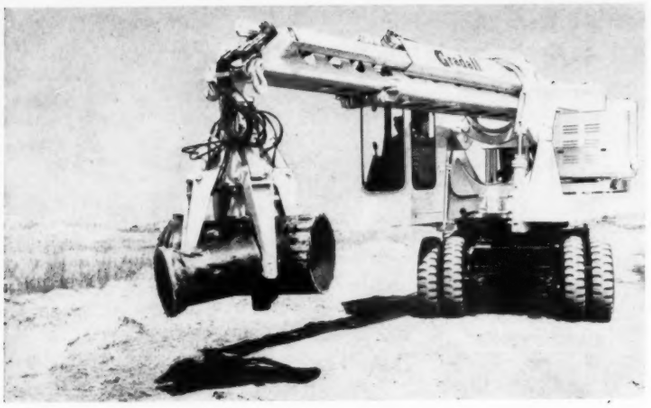


A NEW HIGH BOOM CRADLE that provides a reaching height of 25 feet is now available as an optional feature on all models of the multipurpose Gradall, according to an announcement by the Gradall Division of the Warner & Swasey Co. The new boom is said to make the excavator especially adaptable to material-handling applications. The high boom retains all the operating features of the standard boom, including telescoping action, tilt action, attachment wrist action, 360-degree swing, and up and down movement. The material-handling grapple shown on this self-propelled unit has four tines, each individually controlled with hydraulics. The tines can be operated independently, in pairs, or all at the same time. For more details circle No. 109 on card at page 18, or write to **Gradall Division of the Warner & Swasey Co.**, 5701 Carnegie Ave., Cleveland, Ohio.

New text on surveying

The sixth edition of Middleton and Chadwick's "Treatise on Surveying" has been published by the Philosophical Library. Revised by B. G. Manton and edited by W. Fisher Cassie, the text incorporates modern advances that have been made in the field since the original work was published.

The discussion of the design and construction of surveying instruments has been brought up to date, and references have been modernized.

Additional notes on transition curves for roads have been included, together with a broad discussion of vertical curves. Much of the other material has been recast and rewritten by an expert in the field under consideration.

The text has been published in two volumes. Chain surveying, leveling and contouring, traverse surveying, curve ranging, tacheometric surveying, and drawing-office practice are treated in volume I. Volume II, giving advanced techniques and modern developments, features the measurement of base lines, minor triangulation, trigonometric and precise leveling, and hydrographic and cadastral surveying among the topics treated.

An appendix of spherical geometry and trigonometry provides a review of the mathematical processes involved in the work.

Priced at $20 for the set, the treatise is available from the Philosophical Library, 15 E. 40th St., New York 16, N. Y.

Bulletin on reinforcement of concrete pavements

A new technical bulletin from the American Road Builders' Association discusses the use of welded-wire fabric reinforcement in concrete pavements. Written by Henry Aaron, chief engineer of the reinforced concrete pavement division of the Wire Reinforcement Institute, the booklet cites economy and better performance as advantages gained through the use of welded-wire fabric.

Tables, photographs, and charts illustrate the text, and a brief summary of the objectives of the ARBA and the roster of its technical committee on pavements is also given.

The booklet is available from the Wire Reinforcement Institute, Department 217, National Press Bldg., Washington 4, D. C.

"New Bonus-Powered Internatio

give work-speeding capacity..

To grade the Indian Hills home project site near Sioux City Country Club, Contractor William C. Grady, LeMars, Iowa, must move 132,000 yards of dry clay—must make cuts 35 feet deep, and fills 25 to 40 feet deep. Two new International 55 Payscrapers, push-loaded by TD-18 crawler, replaced two crawler-scraper units, with these big results:

"The two new 55 Payscrapers have jumped our d yardage 1500 yards—*80% or better*—compared crawler-scraper units replaced," reports Owner Gr "The new 55's have proved that even on very s hauls, their rubber-tired speed pays off. Now, our s

"Years of excellent performance from our International crawler fleet, backed by fine service, helped our company grow to a fleet of 11 International crawlers," states Nor-Vel Construction Co., Ferguson, Mo. Here's two of their TD-24's, helping move wet clay on a large Black Jack, Mo., housing job.

"The new TD-9 has got it—more reserve power that speed job," states Owner Gene Elkins, Pontiac, Mich., of his new b powered International crawler—shown doing "clean-up" and ing on a 306-home project near Detroit. "It's really got zip- dirt extra fast in second gear."

The BMCO self-propelled, pneumatic-tire roller compacts clay material in the base of a storage-tank foundation.

Offer pneumatic roller with power steering

■ A self-propelled, pneumatic-tire, 10 to 12-ton roller that features hydraulic power steering for unusual ease of operation is offered by the Browning Mfg. Co. The Model SPR-9 also features complete oscillation on all wheels.

According to the manufacturer, the exclusive BMCO steering system enables this roller to make a quick, short turn in a 20-foot radius. Wheels are easily held in position whether stopped or in motion. The roller is said to be as easily controlled as an automobile.

Four forward and four reverse speeds are provided, and the five front and four rear wheels act independently to give better traction and more perfect compaction whether on even ground, on a crown, or in a ditch line. The over-all height of the machine—6 feet 2 inches—and lower center of gravity are said to give it further advantage over competitive models.

A choice of Chrysler or Continental gasoline or Oliver diesel engines is available. A torque converter, automotive-type hydraulic brakes, and positive parking brakes are standard equipment. Tires are 7:50×15 widetread, either 4 or 6 ply. Two water tanks built into either side of the machine have a total capacity of 150 gallons.

The SPR-9 has a gross weight, ballasted, of 18,900 pounds with 4-ply tires and 24,200 pounds with 6-ply tires. Rolling speeds are 2, 4, 8, and 13 mph. The roller weighs 6,550 pounds.

For further information write to the Browning Mfg. Co., 111 Humble Ave., San Antonio, Texas, or use the Request Card at page 18. Circle No. 173.

BRAB issues report on wall anchorages

An analysis of the anchorage requirements of exterior frame walls to various types of foundations has been issued by the Building Research Advisory Board. Prepared under an agreement between the Federal Housing Administration and the National Academy of Sciences, "The Anchorage of Exterior Frame Walls to Various Types of Foundations" contains a review and correlation of existing data on wall anchorages.

The report contains a formula by which builders can determine whether or not anchorage is necessary. The report also recommends anchorage requirements to withstand seismic forces, wind, and earth pressures. Charts, formulas, diagrams, and maps amplify the text.

Priced at $1.50, the report is available from the Building Research Advisory Board, Division of Engineering and Industrial Research, National Academy of Sciences, National Research Council, 2101 Constitution Ave., Washington, D. C.

Gunite Contractors accept two members

Frank M. Johnson Co., Dearborn, Mich., and Midwest Pool & Court Co., Belleville, Ill., have been accepted for membership in the Gunite Contractors Association, Los Angeles, Calif.

The non-profit association numbers 50 members in the United States and Canada, and provides free information and inspection service to public agencies, architects, engineers, and contractors. The association is located at 714 W. Olympic Blvd., Los Angeles.

←For more facts, circle No. 219

Short-haul yardage soars"

ioutfits . . . .

operating ease"

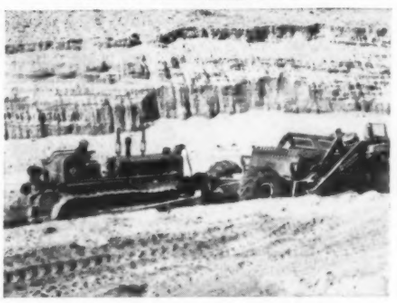
manpower moves practically double our former yardage. Loading averages 42 seconds in dry, hard-packed clay. Easy operation and plenty of power make new Payscrapers the operators' favorites."

Why not try a bonus-powered International outfit on your job? See your nearby distributor for a demonstration!

See you at the ROAD SHOW—
CHICAGO Jan. 27 to Feb. 4, 1957

"I can rip up concrete with pry-action breakout—without strain on the crawler," declares J. E. Johnson, Knoxville, Tenn., of his new bonus-powered TD-9 International Drott Skid-Shovel. "Best grading loader I've operated. Has no-strain steering, fine job vision."

4 new TD-24's. "Work ability and distributor service were major factors when buying 4 new TD-24's," says Tony Petitto, Jr., Byron Construction Co., Clarksburg, W. Va. These tractors replaced 4 competitive crawlers. A fifth TD-24 on this stripping job has worked 7500 hours.



"95% International since 1940—"
"Loose, dead sand—almost impossible to load—yet we average 2500 yards daily where I believe other scrapers would fail miserably," reports Contractor N. V. Lamb, Lusk, Wyo. "The powerful International TD-24 Torque Converter and easy-loading 55 Payscrapers are giving high output in tough material."

"Since 1948, preferred International engines"
"With only routine care our International machines stand up," state Howard and Dorsey Hall, Hall Sand & Gravel, Denver, Colo. Their new TD-14 (142 Series) is shown stockpiling sand. Their International fleet includes a TD-14 Skid-Shovel, four power units!

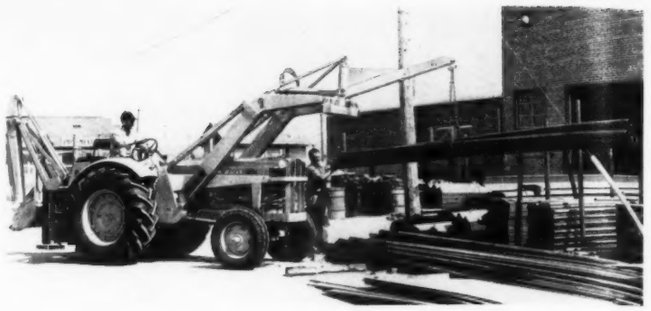
INTERNATIONAL HARVESTER

INTERNATIONAL®
Construction Equipment

International Harvester Company, 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE INCLUDING: Crawler, Wheel, and Pipe-Boom Tractors . . . Self-Propelled Scrapers and Bottom-Dumps . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Trucks . . . Diesel and Carbureted Engines . . . Motor Trucks

The new M-H-F Model 303 Work Bull speeds material-handling jobs for local, state, and federal governments, as well as light and heavy contractors. The utility-boom attachment shown here moves and spots bulky unwieldly machinery, castings, pipe, and other hard-to-handle materials.



Massey-Harris-Ferguson enters construction field with light, medium-duty tractor and tool packages

■ A new line of five light and medium-duty wheel tractors and allied equipment has been introduced by the new Industrial Division of Massey-Harris-Ferguson, Inc. The line is designed to fill the gap between light and heavy equipment on small jobs, where back-up machines for single-purpose equipment are needed, and where cleanup and utility tools are required.

Included in the new M-H-F Work Bull line are tractors ranging in horsepower from 34 to 52, and more than 20 attachments which, teamed with the tractors, provide job-matched tools for such operations as digging, loading, lifting, dozing, trenching, grading, material-handling, and mowing.

Mid-Western Industries, Inc., manufacturer of the Davis line of front and rear-end attachments for industrial tractors, has developed and will supply a special line of equipment for the Work Bulls. These attachments will complement those engineered by M-H-F.

The Model 202 Work Bull is designed for such uses as digging trenches, spreading topsoil, mowing, and landscaping. Featuring a 134-cubic-inch engine, the 202 is capable of delivering 34 horsepower and can mount any of 20 attachments, including front-end loaders, backhoes, mowers, and sweepers. Equipped with six speeds forward and two reverse, it is capable of road speeds up to 15 mph. Recommended bucket-loader capacities range from 9 to 11 cubic feet; backhoe buckets from 12 to 36 inches, depending upon the material. The Forklift attachment on the 202 has a capacity of 2,000 pounds.

Model 303

Besides being fitted for the specialty work performed by the Model 202, the Model 303 Work Bull can be applied to light earthmoving and material handling operations. Equipped with a 208-cubic-inch engine, it delivers 42 horsepower and has an in-line transmission with five speeds forward and reverse. Road speeds up to 15 mph are possible.

The largest loader offered with the 303 has a ⅝-yard capacity. Backhoe bucket sizes range from 12 to 36 inches.

The Model 404 Work Bull, the biggest tractor in the new line, is adaptable to heavier-duty jobs. Delivering 52 horsepower with its 277-cubic-inch, high-torque engine, the 404 handles the bigger buckets, loaders, and hoes. In addition to hydraulic control of both tractor and attachments, it features a five-speed transmission, gear-driven differential, heavy-duty front axle and support, worm and sector steering (power steering optional), heavy-duty clutch, full-pressure lubrication, and a 12-volt electrical system. A diesel engine and power take-off are available as optional equipment. The transmission offers five speeds forward and reverse.

Pit Bull

A torque converter, power clutch, and optional power steering highlight the Davis Pit Bull, which can be employed in a variety of medium and medium-heavy jobs. The unit, a competitively priced shovel-loader that can handle a wide variety of auxiliary attachments, is said to replace and outwork high-priced, single-purpose machines on a large number of assignments. The gasoline engine delivers 42 horsepower. Reversing clutches permit direction changes without shifting. This feature, in combination with the torque converter, makes the Pit Bull particularly valuable in stockpiling operations.

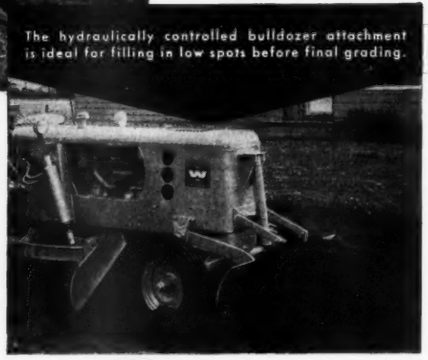
The Model 202 Work Bull Forklift

"a Huber-Warco Maintainer is our most versatile piece of equipment"

A 9' power sliding moldboard picks up loads smoothly.

All hydraulic controls are within easy reach of the operator.

The hydraulically controlled bulldozer attachment is ideal for filling in low spots before final grading.



Calling their Huber-Warco M-52 Maintainer their most versatile piece of equipment is a statement echoed by many contractors engaged in landscaping, light excavation, parking lots and driveway work.

As a grader, the Maintainer with torque converter, permits more load capacity without stalling or wheel slippage. Power and weight are matched for highest working efficiency.

Hydraulically controlled attachments such as a bulldozer, lift-loader, or back-hoe, add to the usefulness of the Maintainer for the contractor.

Other attachments available for use on the Huber-Warco Maintainer include a mower, broom, side dozer, snow plow, patch roller and berm leveler. These attachments are designed for highway maintenance work.

The M-52 Maintainer will outperform many machines that are larger, heavier, more costly, slower, more expensive to operate, and more limited in use. You owe it to yourself to investigate the unmatched versatility of the Huber-Warco Maintainer.

BUILDING BETTER ROADS TODAY FOR A GREATER AMERICA

Huber-Warco Company Will See You At The ROAD SHOW Chicago—Jan. 28—Feb. 2, 1957

For A Demonstration—See Your Nearest Huber-Warco Distributor

HUBER WARCO

HUBER-WARCO COMPANY

MARION, OHIO, U. S. A.

Road Machinery

CABLE ADDRESS: HUBARCO

MEMBER OF INTERNATIONAL ROAD FEDERATION

ROAD ROLLERS • MOTOR GRADERS • MAINTAINERS • GRINDERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 220

The M-H-F Model Work Bull with ⅝-yard front-end loader has a 3,500-pound breakout capacity, a lifting height of 10 feet 6 inches, and a dumping height of 8 feet 6 inches.

The Davis Pit Bull is an engine-in-rear, shovel-loader equipped to work with a variety of auxiliary attachments.

is based on a specially built unit, utilizing the basic 202 in reversed position with the load over the large drive wheels. If desired, the fork arms can be easily detached and replaced with either a blade or bucket to handle utility and cleanup work.

Topping the list of attachments for the Work Bull line is the Davis 185 backhoe. For use on all of the Work Bull models except the 202 Forklift, it is offered in 12 to 36-inch bucket sizes. The unit is designed to operate to the rear, at a right angle to either side, or any point in between. Unique couplers on the backhoe facilitate quick, easy freeing of the tractor for other functions. Hydraulic stabilizers are individually adjustable. Davis 9 and 11-cubic-foot loaders are available for the 202, and 11-cubic-foot and ⅝-yard Davis loaders are offered for the 303 and 404. Both feature four-point mounting for fast, easy hook-up and removal.

Model 500 loader

The Davis 500 loader is offered in a ⅝-yard size for the 303 and 404. A unique mounting principle puts the full power of the tractor behind and in line with the bucket. The superstructure carries the load weight without strain on the tractor center. Full-power hydraulic control permits a high degree of maneuverability, versatility, safety, and ease of handling.

Pitt Bull attachments include a ⅞-yard-capacity material bucket, a hydraulically angled 8-foot dozer blade, a hydraulically driven and angled 96-inch broom, 12 to 36-inch backhoes, a 2,000-pound-capacity fork-lift, a 72-inch scarifier attachment for the loader, and a hydraulically controlled utility crane.

Reel, rotary, and side-mounted mowers are available for the 202. Side-mounted cutter-bar mowers are available in 5, 6, and 7-foot widths, and are designed to cut over uneven ground—an advantage on highway shoulder work.

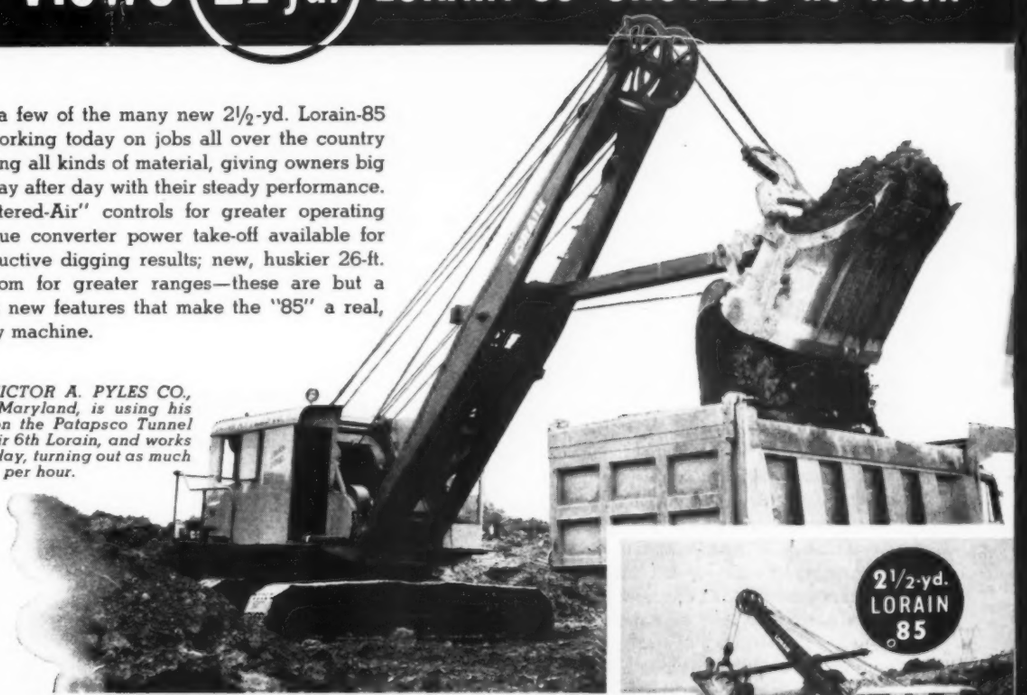
Other available attachments that further increase versatility of the new line include fork-lifts, graders, angle-dozer and dozer blades, snowplows, sweeper-brooms, post-hole diggers, rotary trenchers, pipe and cable layers, winches, utility booms, scarifiers, and pintle hooks or swinging drawbars, for hauling operations.

For further information write to the Industrial Division, Massey-Harris-Ferguson, Inc., 1721 Packard Ave., Racine Wis., or use the Request Card that is bound in at page 18. Circle No. 174.

For more facts, circle No. 221→

Job Views 2½-yd. LORAIN-85 SHOVELS at work

Here are a few of the many new 2½-yd. Lorain-85 Shovels working today on jobs all over the country . . . handling all kinds of material, giving owners big yardage day after day with their steady performance. New "Metered-Air" controls for greater operating ease; torque converter power take-off available for most productive digging results; new, huskier 26-ft. shovel boom for greater ranges—these are but a few of the new features that make the "85" a real, heavy-duty machine.



At right, VICTOR A. PYLES CO., Baltimore, Maryland, is using his Lorain-85 on the Patapsco Tunnel job. It's their 6th Lorain, and works 20 hours a day, turning out as much as 300 yds. per hour.

C. J. LANGENFELDER & SONS, INC., Baltimore, Md. own 2 Lorain-85 Shovels. Above, one is working near Auburn, Mass., on their 3,300,000 yd. grading contract on the Massachusetts Toll Road. Below, the other is shown digging and loading borrow in Baltimore. Langenfelder has purchased a total of 26 Lorains.

EMIL ANDERSON CONSTRUCTION CO., LTD. used his 2½-yd. Lorain-85 Shovel to dig a diversion tunnel on the Cheakamus Hydroelectric Development Project for the British Columbia Electric Co., Ltd., Vancouver. This is Anderson's 6th Lorain.

LYCOMING CONSTRUCTION CO., Williamsport, Pa., handle tough digging with their 2½-yd. Lorain-85 Shovel on a curve and grade elimination program on Pennsylvania Route 31. Another of Lycoming's 85's works as a crane on a ⅔-mile long bridge construction on the same job. This is Lycoming's 17th Lorain.

THE THEW SHOVEL CO.
LORAIN, OHIO

CHAS. CAPONE CONSTRUCTION CO., Dedham, Mass., tackle the Massachusetts Expressway job near Braintree, using their 2½-yd. Lorain-85 Shovel to remove a ledge of rock and dirt. This is their 4th Lorain.

THEW LORAIN®

New 200-hp scraper hauls 14 cubic yards

■ The new TS-260 motor scraper, a 200-hp unit weighing approximately 39,600 pounds, has been introduced by Allis-Chalmers Mfg. Co. The scraper is powered by an A-C 6-cylinder diesel engine.

The 14-cubic-yard heaped capacity of this new model is said to give it a high production rating in the medium-size scraper class. A high yardage-to-horsepower ratio is maintained, according to the manufacturer, and the horsepower-to-gross-weight ratio is also said to be favorable.

A hydraulic pump, gear-driven from the rear of the engine crankshaft, is said to provide positive drive and to asure constant live power for steering and scraper operation. The curved bottom and three-piece cutting edge with offset center edge give faster penetration and better loading with "live" action. The positive forward ejection plus high apron lift reportedly provide fast, clean spreading.

Among features incorporated in the new scraper is selective hydraulic steering, which provides two-speed steering by action of a control valve that is actuated from the wheel by direct linkage. A 30-degree turn of the steering wheel right or left directs full hydraulic power to double-acting steering jacks for fast, accurate, full 90-degree steering. Synchronized four-wheel air brakes, plus an emergency brake system which goes into action in the event of air-line failure, assure braking and complete control of the TS-260 by the operator at all times.

Accurate distribution of weight reportedly provides maximum traction, flotation, and tire life. When the bowl is empty, 66 per cent of the entire weight is carried on the tractor wheels and the remaining 34 per cent by the scraper wheels. When it is loaded, each tire supports an equal amount of weight.

Other engineering features include an all-steel welded box-type frame for rigid support and maximum true alignment of the power train, "control tower" visibility from the foam-rubber-cushioned and upholstered bucket-type adjustable seat, and 24-volt electric starting system.

Optional equipment includes 26.50 × 25 wide-base tubeless tires as replacements for the 21.00 × 25 tires which are standard on the scraper.

For further information write to the Allis-Chalmers Mfg. Co., Milwaukee 1, Wis., or use the Request Card that is bound in at page 18. Circle No. 171.

Arizona reorganizes highway districts

Five engineering districts, identical with the commission districts, have been established by the Arizona Highway Department. In District No. 1, covering Maricopa and Yuma counties, William P. Copple has been named commissioner and J. B. Robinson, district engineer.

Grover J. Duff has been named commissioner of District No. 2, Pima, Pinal, and Santa Cruz counties. William N. Price will be district engineer. In Cochise, Graham, and Greenlee counties, comprising District No. 3, Frank E. Moore and J. R. Van Horn were named commissioner and district engineer, respectively.

James R. Heron will serve as commissioner of District No. 4, which includes Apache, Navajo, and Gila counties, and R. J. Holland will be district engineer. In District No. 5, Mohave, Coconino, and Yavapai counties, Frank L. Christensen was named commissioner and Angus Chadwick, district engineer.

Cold facts about buying fuels, motor oils and greases

Why Standard Oil can serve

Got a construction job in the Midwest or Rocky Mountain states? Bidding on one? Already working a job? Then read how you can get better service and better fuels, lubricating oils and greases.

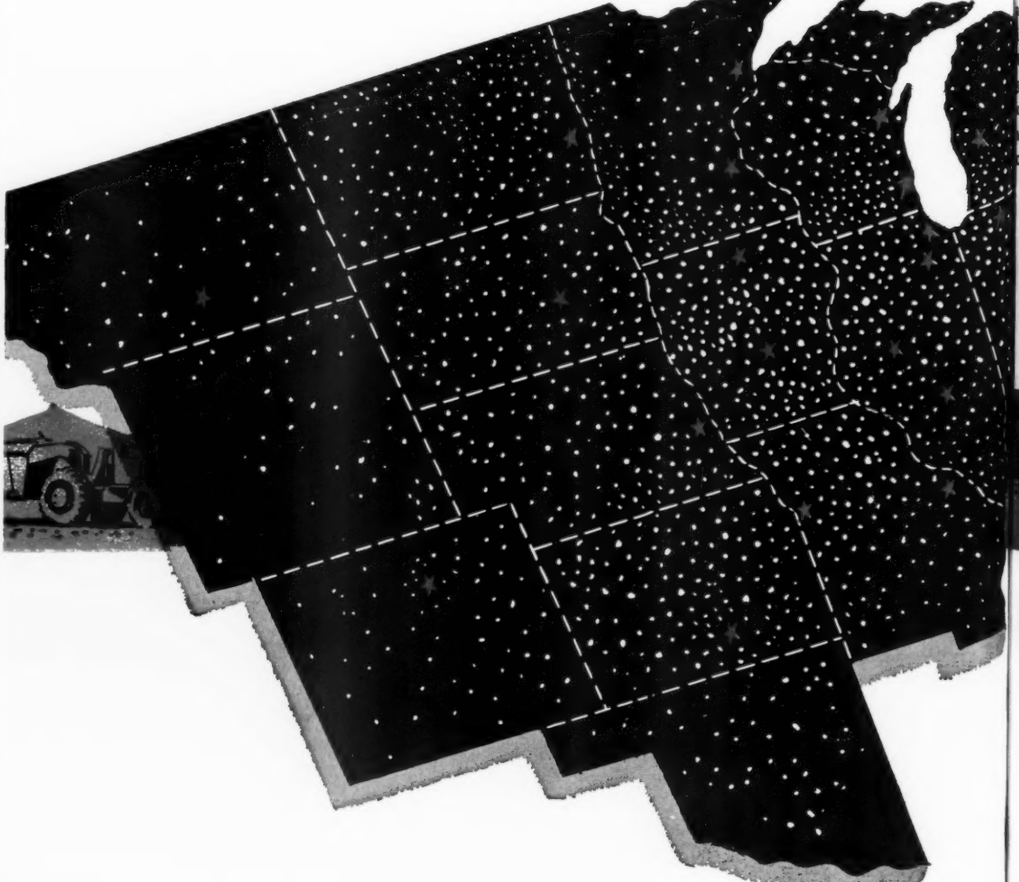
How you get service on the job.

In the 15 Midwest and Rocky Mountain states there are more than 3,900 Standard Oil bulk plants. With this many plants, none can be more than a few miles from your job no matter where it is. Experienced men work out of these bulk plants to see that you get on-the-spot service. They see that you are supplied day and night. If you work two shifts or even thre they may too.

In addition, there are 23 Standard Oil divisi offices in the 15 states. In each office there is a ch automotive engineer and a staff of automotive lub cation specialists. All of these men are qualified give technical service. Most of the men have en neering degrees. They have received extensi training in Standard Oil's own Automotive Sa Engineering School. *All of these men are* Standa Oil *employees.*

The kind of service you get from STANDAR

Automotive lubrication specialists from Standa division offices will survey your equipment a



PORTABLE SEISMIC INSTRUMENTS are operated under the shelter of canvas by geophysicist George MacLeod of Fisher Research Laboratory, Palo Alto, Calif., during preliminary investigations for construction of Swift Creek Dam on the Lewis River in Washington. This is part of exploratory work for the 265,500-kw hydroelectric project of Pacific Light & Power Co., Portland, Oreg., which was done by Bechtel Corp., San Francisco and Los Angeles. The delicate instruments, recording shock waves from underlying rock as blasts are set off, made it possible for the depth and form of topography below the site of $58,700,000 dam to be determined in 19 days, despite bad weather and field conditions.

ve you better

commend the fuels, motor oils, greases to use. hey will help you set up a preventive maintenance ogram and suggest lubrication schedules. They ll back this up with service from the Standard Oil lk station so that your equipment is *never* idle for k of petroleum products. Through them you have direct line to Standard Oil headquarters and labotory for additional help.

Refinery to you, it's all STANDARD.

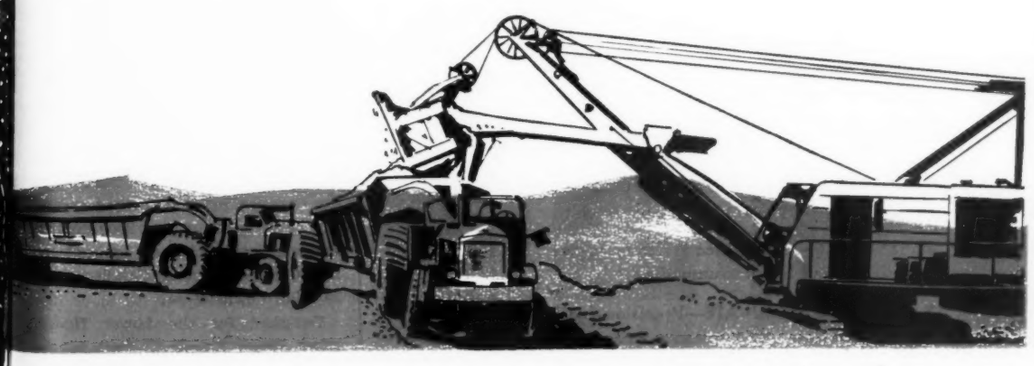
All Standard Oil fuels, lubricating oils and greases are made by Standard and delivered to you by Standard Oil employees with Standard's own distribution system. Everywhere you go in the Midwest and Rocky Mountain states there is a *Standard Oil* owned and operated bulk plant within a few miles. You deal with one company. Every Standard Oil supply point is equally and uniformly well run.

How to get in touch.

Because Standard Oil lubrication specialists so thoroughly cover their territory, you can depend upon meeting your man at any important contract letting —if you haven't already met him. If you miss him, look in the telephone directory of any town—no matter how small—nearest your job. You'll find the Standard Oil bulk plant listed under the Standard Oil name. If you still miss, sit tight, the Standard Oil man will be around to see you *before* you need him and he will be ready to serve you starting right then. If you would like more information right now, write or call Standard Oil Company, 910 South Michigan Avenue, Chicago 80, Illinois.

Why STANDARD OIL products are tops for construction equipment.

tandard Oil lubricants, fuels and greases are approved by equipment manufacturers. But there's ore to it than just that. Most big equipment manufacturers' plants are right here in the Standard Oil erritory. Standard works closely with these manufacturers, knows what's needed of the fuels, motor ls and greases used in construction equipment. tandard Oil fuels, lubricants and greases are used many manufacturers in initial fills and lubrication. All products equal or exceed specifications of e manufacturer. They will stand up to any job ou give them with plenty to spare.



Standard Oil serves these Midwest and Rocky Mountain states

Colorado	Michigan	N. Dakota
Illinois	Minnesota	Oklahoma
Indiana	Missouri	S. Dakota
Iowa	Montana	Wisconsin
Kansas	Nebraska	Wyoming

STANDARD

STANDARD OIL COMPANY (Indiana)

For more facts, use Reader-Reply Card opposite page 18 and circle No. 222

New safety manual accents importance of supervisors

A new book from the National Safety Council, covering every major aspect of occupational accident prevention, stresses the importance of the supervisor in maintaining hazard-free operations and arousing safety consciousness in individual workers. Written by staff engineers of the council's industrial department, "Supervisors Safety Manual" contains material on first aid, protective equipment, materials handling, machine guarding, the use of portable power tools, and on fire prevention.

The manual may be used as a text for group training, for individual study, or as a reference work on the general safety problems encountered by foremen. Recognizing the safety problems peculiar to each type of work and determining means of overcoming them is discussed in detail. Such special cases as the "accident prone" worker and workers with mental disabilities are also discussed.

Numerous photographs and drawings illustrate the safety measures suggested in the text. Recommended safety posters are also pictured.

Priced at $3.25 for members and $6.50 for non-members, "Supervisors Safety Manual" is available from the National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Portland Cement group to build new laboratories

Two new laboratory buildings will be constructed by the Portland Cement Association at its Skokie, Ill., research and development center. Estimated to cost $1.8 million with their equipment, the buildings are scheduled for completion next year. They will handle the association's expanded research on concrete structures and on the fire resistance of concrete.

Identical precast structural members will be used for the main portions of both buildings. Frames will be of conventional reinforced concrete, and the beams will use high-strength steel reinforcing bars. The tilt-up method will be used for walls.

The Structural Development Laboratory will measure 56×176 feet, and the Fire Research Center will be 56×220 feet, with a two-story 24×132-foot wing on one side.

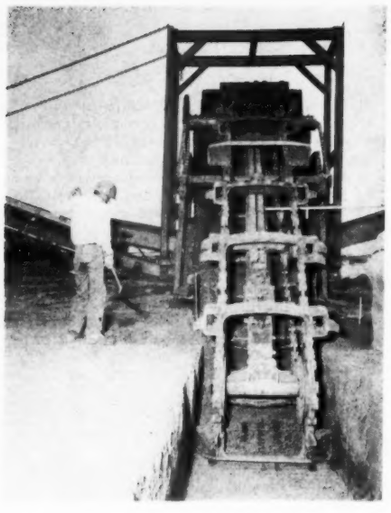
Circulating oil heater

■ The Cutler circulating oil heater, designed to heat asphalt or other heavy viscous materials by means of heat transfer oil, is detailed in a folder from the Asphalt Equipment Co., Inc. The rated output capacity is two million Btu's per hour and, according to the specification chart, maximum temperature ranges to 600 degrees F. The construction features of the heater are pictured and described.

To obtain the folder write to the the Asphalt Equipment Co., Inc., P. O. Box 2498, Fort Wayne, Ind., or use the Request Card at page 18. Circle No. 170.

Slab-and-buttress dam built on clay foundation

Special buckets dig square trenches to accurate grade for foundation beams of concrete spillway sections



Anchor trenches for the base slab of the dam are made in the clay by a Buckeye 160 trencher. Every fourth bucket has been replaced by a specially shaped bucket that cuts the flat bottom of the trench and squares off the corners.

Constructing a 60-foot-high dam founded on a relatively shallow bed of clay underlaid with more or less unstable material presented problems to both the designer and builder of the Wesley E. Seale Dam, which will extend about 6,000 feet across the valley of the Nueces River near Mathis, Texas. The major design problems were solved by giving the dam two Ambursen type slab-and buttress concrete spillway sections, joined to each other and to the banks with compacted earth sections.

Construction problems are being solved as they arise by the H. B. Zachry Co., San Antonio, Texas, the successful bidder on the $6,720,030 project. One of the early problems, obtaining the necessary aggregate for the 87,000 cubic yards of concrete required for the structure, has already been solved. (See "Excess Sand Poses Problem in Aggregate Production at Dam", C&E, June, 1956, pg. 62.)

When this new dam is completed in the fall of 1957, it will greatly increase the capacity of Corpus Christi Lake, created a few hundred feet upstream by an existing dam that is lower than the one being built. This lake is currently the principal source of water for the Corpus Christi area.

The first 600 feet of the new dam, beginning at the south bank, is an impervious rolled-earth section. The south spillway, a reinforced-concrete section 1,350 feet long, includes non-overflow abutments. Near the middle of the valley is a center earth embankment, 400 feet long, which joins the south and north spillway sections. The north spillway is similar to the south spillway, but it is 1,560 feet long. A 2,200-foot-long earth embankment on the north completes the closure of the valley.

Municipal water supply

Water overflowing the spillways goes through a series of tapered diffuser girders and falls like rain on a concrete hearth. From the hearth, it passes through a stilling basin before being returned to the river channel. Normal discharges from the reservoir are controlled through outlet works located adjacent to the south abutment of the south spillway structure. Water for use in the Corpus Christi municipal system will be released to the river channel as needed and picked up again at the filtration plants near Calallen some 20 miles downstream.

Designed for the Lower Nueces River Water Supply District by the Ambursen Engineering Corp., New York and Houston, the concrete sections of the dam embody the Ambursen patented design. Similar to that of the San Jacinto dam near Houston, the design is well adapted to the subsoil conditions existing at this site.

The concrete spillways are founded on base slabs which, in the typical section, are 72 feet wide and 18 inches deep. Projecting below these slabs are five longitudinal beams, each approximately 3.5×4 feet in

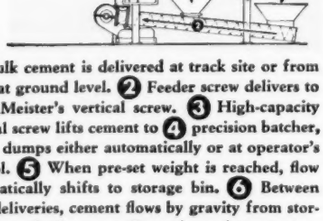
Weighmeister Screw-Action Batch Lift by Burmeister

PROVIDES SAVINGS IN WEIGHT, INITIAL COST

Now 350 bbl.

THE ONLY PORTABLE FAST, ACCURATE AND COMPLETE CEMENT BATCH UNIT ON THE MARKET TODAY WITH LARGE CAPACITY CEMENT STORAGE

READY FOR AUTOMATIC OPERATION, NOTHING TO BUY OR ADD, JUST CONNECT TO YOUR POWER LINES



❶ Bulk cement is delivered at track site or from truck at ground level. ❷ Feeder screw delivers to WeighMeister's vertical screw. ❸ High-capacity vertical screw lifts cement to ❹ precision batcher, which dumps either automatically or at operator's control. ❺ When pre-set weight is reached, flow automatically shifts to storage bin. ❻ Between bulk deliveries, cement flows by gravity from storage bin to feeder screw. Controls can be set to stop feeder and vertical screws automatically, if desired, when weight is reached.

*Now Proven!

1 **PORTABLE**—Sets up on a single truck. All air and electric lines have plug-in type connections.

2 **VERSATILE**—Can be used as a transfer plant, batch plant with railroad or truck unloading.

3 **FAST AND ACCURATE**—Precision-fed batcher, automatic controls constantly give uniform mixes.

4 **RUGGED**—Built to withstand constant moving.

***After 20 months of continuous service the pilot unit showed no signs of wear, required minimum maintenance, and had no down-time for repair!**

Burmeister
COMPLETE PLANTS FROM A SINGLE SOURCE

WRITE FOR FULL DETAILS

Write or call for complete information. We will be happy to answer your questions . . . without obligation. L. BURMEISTER COMPANY, 4535 W. Mitchell Street, Milwaukee, Wis.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 223

section and extending the entire length of the spillway. These base slabs rest on a relatively shallow bed of good load-bearing clay that exists near the floor of the valley.

Underlying this clay strata are materials which would not provide suitable support for the dam. If the clay strata was not able to support the structure, it would probably have been necessary to excavate to a considerable depth to locate another suitable bearing material.

Rising above the heavily reinforced base slab, the superstructure of the dam consists of a series of buttresses spaced at 20-foot centers perpendicular to the axis of the dam. A typical buttress tapers from a thickness of 21 inches at the base slab to 12 inches at the top, more than 50 feet above the base. Haunches on the upstream ends of the buttresses receive the deck slabs that span between buttresses to close the upstream face of the structure. These deck slabs taper from a thickness of 28 inches at the bottom to 22 inches at the top.

Steel leaf gates, mounted on top of the concrete deck slab, will control the maximum backwater elevation. The dam has been designed to support an additional 10 feet of height. Reinforcing bars of proper length to provide dowels for this extension are built into the present structure, bent over, and encased in concrete. If the extension is ever built, the bars can be exposed by removing a small amount of concrete.

Spillway downstream beams and spillway upstream beams span between the buttresses to support a series of tapered diffuser girders. These girders break up the flow of water over the spillway and permit it to fall gently on the hearth below.

To prevent any seepage or undermining of the structure, two rows of sheet piling were driven near the upstream and downstream edges of the base slab, and another row was driven in the toe of the hearth section. Piling penetrated from 20 to 50 feet into an impervious strata below.

High earth embankments

The rolled earth embankments range in height from practically nothing at the banks to a maximum of almost 85 feet. The top elevation of the embankments is 12 feet above the spillway level. All embankments, from 20 to 51 feet wide at the top, slope at 3 to 1 on the upstream face and 2½ to 1 on the downstream face.

Extending for the length of the earth embankments is a core trench 15 feet deep. The trench, 12 feet wide at the bottom and sloping 1 to 1 on both sides, is located slightly upstream of the axis of the dam. In this core trench, a sheet pile cutoff was driven to impervious material.

The embankments have an impervious rolled-clay core, and the rest of the section is made of other available materials, all thoroughly compacted. The upstream face is lined

(Continued on next page)

A Lima crane handles leads for a McKiernan-Terry S-5 steam hammer during pile-driving operations in the deep excavation for the stilling basin. In the background is the wellpoint system used to dewater the site.

Model 543. No machine or method can equal the low cost loading of this Barber-Greene loader. High travel speed, high capacity and finger tip discharge control save job time, man time, truck time.

Cut loading costs the continuous way

In a Massachusetts sand and gravel pit, a Barber-Greene Model 543 Bucket Loader handles 900 tons of ¾″ stone every day—easily tops all other methods in truck loading operations.

The 543 is ideal for the all-day-long loading operations of one truck after another because its continuous flow maintains maximum capacity regardless of the skill or zeal of the operator.

Its simple operation makes it easy for drivers to load their own trucks. A hydraulically controlled swivel conveyor has the reach to load highest and longest trucks and trim the load to full capacity every time. And this versatile loader can be easily converted into a coal, snow or leaf loader.

Model 550 removes windrows in a hurry . . . with a capacity that keeps ahead of all trucks normally available. This light, highly maneuverable machine reduces windrow loading to lowest cost. Self-propelled at 10 m.p.h., with a turning radius of 8′ 6″.

Model 82A moves 1200 yards in 8 hours. That's the record of a Barber-Greene in a New York building and supply yard. Handles sand, stone, coal and other materials at high capacities. Easy operation permits driver to load his own truck.

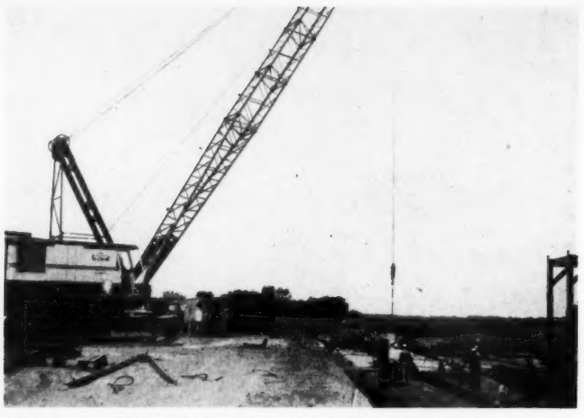
Model 582 speeds topsoil stripping. Crawler mounted for sure footing on all soft bases, and equipped with a hydraulic swivel conveyor, the 582 is the fast, profitable way to load from stockpile, windrow or bank or to make light excavations.

56-38L

Write for literature on any loader in the Barber-Greene line

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 224



After the trench is graded, workmen level off another inch for a protective mortar coat to be placed over the subgrade. Here grout is placed by the Bucyrus-Erie 54-B with Gar-Bro 2-yard bottom dump buckets.

with 9 inches of gravel and 1½ feet of riprap extending from the low water line to the top of the dam. The downstream face has a similar treatment from the normal ground level to the elevation of maximum backwater in the valley.

The general contractor started work by building two work roads across the valley, one on each side of the dam. A screening, washing, and crushing plant was set up in a gravel pit about 25 miles from the job, the closest source of suitable aggregate for the concrete. A concrete plant was set up on the dam site, and stockpiles of aggregates soon appeared.

Meanwhile, excavation for the concrete portions of the dam and stripping of the base areas of the earth embankments were started. All suitable material from the excavation was incorporated into the earth embankments.

Sheet piling from Luxembourg

Because American suppliers were unable to make deliveries in time to get the job started on schedule, the 5,830 tons of sheet piling for the cutoff walls were purchased abroad from Amerlux Steel Products Corp. The Arbed-Belval sheet piling was manufactured in Columeta, Luxembourg, shipped from Antwerp, Belgium, directly to docks at Corpus Christi, then trucked to the job site by Guy Shinn, Hamilton, Texas, the piling subcontractor.

Sheet pile sections, designated BZ1R, BZ2R, and BZ4, are 18-inch Z-shaped sections. Shinn drove the piling through hard clay and some sandstone with McKiernan-Terry 9-B-3, 11-B-3, and S-5 and S-8 steam hammers in leads handled by three Lima ¾ and 1-yard cranes. In the extremely hard driving, the heavier hammers were used. Two of the cranes equipped with ingenious leads, manufactured in the contractor's shop, were simply H-beams with a few welded fittings. The hammers used with these leads were fitted with cleats that fit around one flange of the beam so that the hammer could ride up and down, guided by the beam flange.

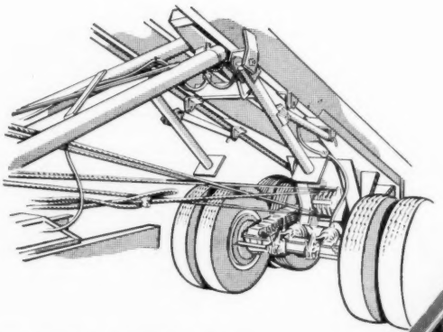
Mortar protects excavation

Excavation for the concrete structures was carried down to about an inch above grade by a Bucyrus-Erie 54-B dragline and a Gradall hydraulic shovel. A Buckeye 160 trencher then moved in to cut the trenches for the base beams. Special square-nosed buckets, replacing every fourth regular bucket on this trencher, finished the ditches to accurate grade and shape, leaving a minimum of handwork to be done.

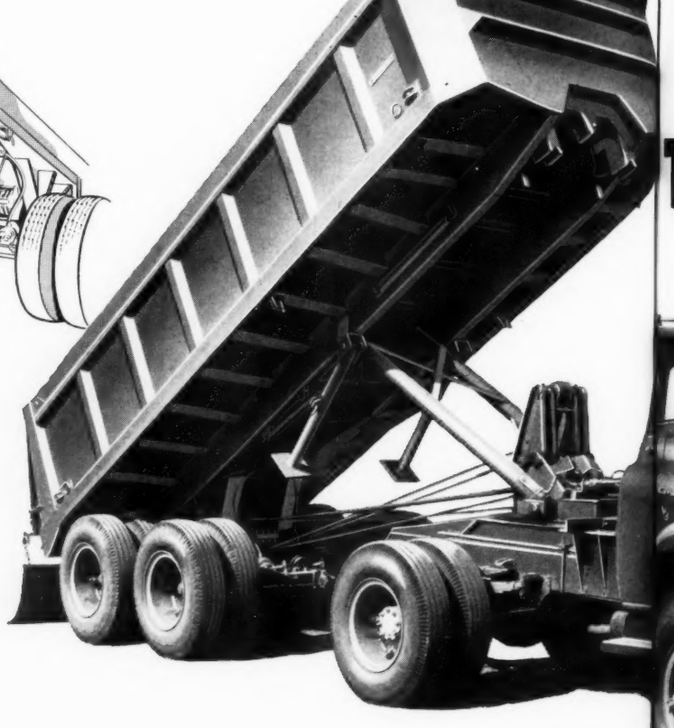
The trenches were excavated to 1 inch below finished grade to provide for a protective mortar coating over the clay subgrade. As the trencher moved along, hand crews excavated the areas between the trenches to 1 inch below grade. One-inch wood screeds were then set, and the coating of mortar applied immediately. The mortar protected the clay subgrade from weathering, before concrete was placed. Once mortar was applied, the subgrade could not be softened or disturbed by rain, and rain water could easily be pumped out of the trenches. Specifications required that the mortar be applied to finished excavation within 36 hours of the time they were brought to grade.

The sand-cement mortar was mixed in the batch plant and delivered to the work area in Gar-Bro 2-yard buckets hauled on Ford flat-bed trucks. The Bucyrus-Erie 54-B crane swung the buckets to the placing crews. The mortar was simply struck off to the top of the screeds on horizontal surfaces, but it was applied to the sides of the trenches with trowels, much the same as plaster.

The Fruehauf-Schonrock Volume★Dump allows you to carry up to 4000 pounds of *extra* payload on every trip, when compared with conventional dump Trailers. Whether you're removing dirt or bringing gravel or fill dirt in, this extra capacity means greater efficiency and speed and bigger profits for you!



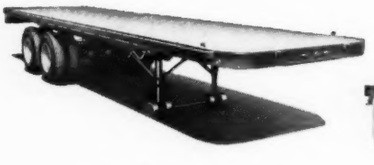
The greatly simplified, easily-repaired cable dumping mechanism of the new Fruehauf-Schonrock Volume★Dump is much less expensive than present complicated hoist-type Trailer mechanisms. It also provides you with a more efficient unit that costs considerably less than the larger number of straight dump trucks required to handle a comparable load.



A FRUEHAUF TRAILER IS YOUR MOST EFFICIENT HAULING UNIT ON ANY CONSTRUCTION JOB! INVESTIGATE THESE COST-CUTTING PROFIT-EARNERS, TODAY!

FRUEHAUF TRAILERS

"ENGINEERED TRANSPORTATION"



Low-Cost Multi-Purpose Steel Platforms

Heavy-Duty Steel And Aluminum Platforms

Removable and Stationa Gooseneck Carryalls

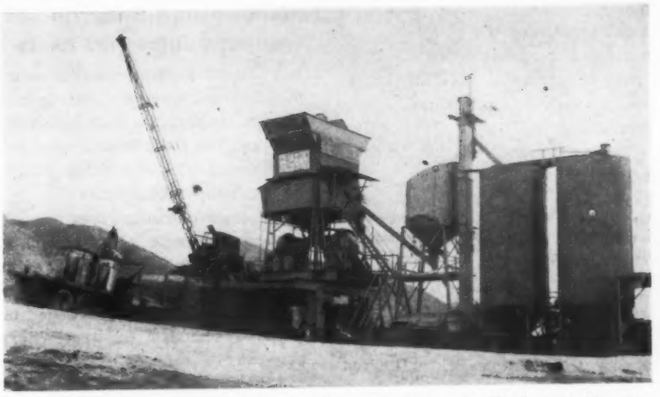
Although the excavations for the base slab were shallow and did not require dewatering, some of the excavations for the stilling basins and outlet works, well below the ground water table, were carried down with the aid of a single stage of wellpoints that drew the water level down 19 feet. The system included 198 wellpoints, 1½ inches in diameter, on 24-foot pipes. These were connected through 8 and 10-inch headers to two 125-hp butane-burning pumps.

Heavily reinforced

Although some of the pours are relatively large, there is no mass concrete in these structures. All of the sections are heavily reinforced structural members. To facilitate delivery, the order for the 13 million pounds of reinforcing steel was divided among three suppliers, Mosher Steel Co., Houston; and Campbell Steel Co. and Alamo Iron Works, both of San Antonio. The reinforcing was placed by a subcontractor, G & N Corp., Galena Park, Texas.

Concrete for the structure was produced by a plant set up on the north bank, adjacent to the dam site. This plant was planned to produce concrete at a rate of 90-cubic yards per hour, based on a 2-minute mixing time required in the specification. It is semiautomatic and electrically operated.

Cement, supplied by the Halliburton Portland Cement Co., Corpus Christi, is delivered in self-unloading truck trailers, dumped into a hopper, and carried to a Butler elevator by a 10-inch × 30-foot cement screw. The elevator feeds either a Butler 225-barrel cement bin or two Tampo 660-barrel storage silos by gravity. A second 10-inch × 30-foot screw carries the cement from the Butler bin to the Ingram batching equipment in the plant tower. An interlock on the cement handling equipment permits cement trucks to unload without interfering with the automatic plant operation.



A Ford flat-bed truck carries Gar-Bro 2-yard buckets to be filled at the 90-cubic-yard-per-hour batching setup supplying the job. Cement from the Tampo 660-barrel silos or the Butler 225-barrel bin is carried by screw conveyor to the batching equipment, while aggregates are charged into the Ingram 3-compartment bin by a Lorain crane.

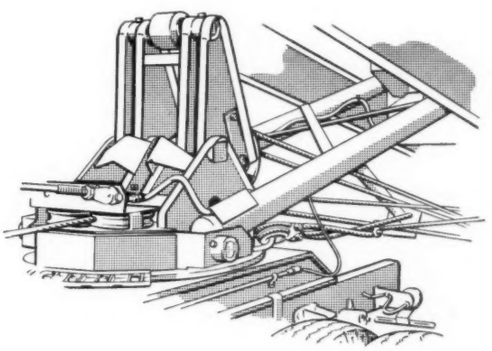
Aggregates are charged from the stockpiles to an Ingram 45-yard three-compartment bin by a Bucyrus-Erie 22-B crane using a Yaun 1-yard rehandling bucket, while aggregates are pushed to the crane by a Caterpillar D6 tractor. A Lorain L-85 truck-crane substituted for the 22-B during the early stages of the operation. Both cement and aggregate bins are equipped with Syntron air-operated vibrators to facilitate the flow of materials. All the vibrators and other plant uses is supplied by an Ingersoll-Rand .85-cfm compressor powered by a 30-hp electric motor.

The weighing and plant operation are semiautomatic, requiring only one workman on the operating platform in addition to one bin man. Both the cement and water scales have automatic shutoffs as well as weight recorders. Water is proportioned by weight rather than volume, and Protex air-entraining agent is automatically batched with the water. After the operator starts the flow of cement and water to the scales by hand, he is free to weigh the aggregates.

Batches are dumped into one of two Koehring 56-S tilt mixers mounted on the lower platform of the tower and, after the minimum 2 minutes of mixing, discharged into a surge hopper with air-operated gates. The Gar-Bro 2-yard concrete buckets are filled from this hopper. Ford TL800 flat-bed trucks, each carrying three of the buckets, shuttle between the plant and the site where concrete is being placed.

Water from lake

The water supply for mixing and curing the concrete is pumped from Corpus Christi Lake by a Peerless pump powered by a 30-hp electric motor. The water goes through a line of 4-inch high pressure aluminum



The new Fruehauf-Schonrock Booster Fifth Wheel considerably reduces line tension during the entire dump cycle and thereby insures longer life for cables, winch and truck engine than was ever before possible. At the beginning of the dump cycle, where strain is greatest, the Fruehauf-Schonrock Booster Fifth Wheel reduces line tension by 75%.

To Make Lower Bids And Higher Profits...

Invest In Cost-Cutting Fruehauf Hauling Equipment!

EVERY TRAILER in Fruehauf's *complete* line of hauling units for the construction industry has been engineered to provide you with a practical tool to cut operating expenses and increase hauling profits.

If your operation calls for a cost-whittling, top-performing dump unit, for example, then the Fruehauf-Schonrock Volume★Dump is the best equipment for the job. It's low in cost and economical in upkeep because of its simple cable dumping mechanism. It provides extra capacity for more profitable hauling through its lighter yet stronger construction. And it's the easiest-to-handle, safest operating dump Trailer on the road today.

Call your local Fruehauf Branch collect, today, or mail the coupon below for complete information on the Fruehauf-Schonrock Volume★Dump. When you call or write, ask about Fruehauf's convenient and liberal "Pay As You Earn" Finance Plans. They're available to all qualified operators and geared to your industry.

4000 POUNDS EXTRA PAYLOAD ☆ BETTER DUMPING STABILITY
LOWER INITIAL INVESTMENT ☆ MORE SIMPLE MECHANISM
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For more facts, use Reader-Reply Card opposite page 18 and circle No. 225

irrigation pipe to three 500-barrel settling tanks at the plant site. Another Peerless pump sends the water from the tanks to the batch plant and through 4-inch pipelines to the dam site.

The major quantities for the project include:

Earthwork	1,000,000 cubic yards
Concrete	87,000 cubic yards
Riprap	26,000 cubic yards
Reinforcing steel	13,000,000 pounds
Copper waterstop	14,000 pounds

The 120-foot spillway crest gates, each measuring 20 feet, were supplied by the American Bridge Division of U. S. Steel.

Although this job covered only about a mile from end to end, the contractor made good use of a GE short-wave two-way radio system to coordinate operations. The base station is in the project office, and mobile type units are in the concrete plant, aggregate plant, project manager's automobile, and three pickup trucks of key supervisors.

Personnel

Supervising the activity for H. B. Zachry Co. is project manager J. A. "Al" Downey. He is assisted by assistant project manager R. E. Hood, project engineer C. M. Fisher, superintendent of aggregate production Fed Doyle, and concrete superintendent D. V. Moore.

The owner is represented on the work through the Ambursen Engineering Corp. by resident engineer B. G. Bryan and assistant resident engineer B. W. Boulware. General manager of the Lower Nueces River Water Supply District is Victor Jaeggli.

THE END

Contractors tools

■ Thor Power Tool's complete line of contractors' tools is presented in a catalog. Lead-off pages of each section of the catalog contain schematic drawings, and engineering and design features of the basic tool to be described. A picture of each model accompanies an action shot of that particular model. The tool and its related models are fully described, and a specification table is given. Attachments, accessories, and replaceable parts are also listed in the 68-page catalog.

To obtain Catalog No. 44 write to the Thor Power Tool Co., 175 N. State St., Aurora, Ill., or use the Request Card that is bound in at page 18. Circle No. 93.

Wire rope chart

■ A 17¼ × 21½-inch wall chart of Acco Registered Cable-Laid wire rope slings is available from the American Chain & Cable Co. Sketches bordering the chart show various applications of the slings. A table lists sling diameters in inches, wire rope construction, and sling capacities in pounds.

To obtain this chart write to American Chain & Cable Co., Inc., 929 Connecticut Ave., Bridgeport 2, Conn., or use the Request Card at page 18. Circle No. 63.

Sandblasting machine accommodates two hoses

■ A new sandblasting machine manufactured by Clementina, Ltd., permits the operation of two blast hoses from one pot. The Clemco Model CA 2460 is equipped with two hoses working off two sand-control valves.

The Clemco machine is of the double-chamber type. It holds 1,000 pounds of sand and has automatic pop-up filling valves and 1¼-inch piping. Since all blasting is done from the lower chamber, the upper chamber can be refilled without interrupting the sand-blasting operations.

Two blast hoses can be operated at the same time from the new Clemco 1,000-pound-capacity sandblasting machine.

Transfer of sand from the upper to lower chamber is done automatically.

Mounted on three legs and equipped with lifting ears, the Clemco rig is recommended for large operations. If desired, however, the machine can be used with only one hose operating.

For further information write to

More Work-ability wit

The simple, practical design of these "Euc" Scrapers with capacities of 7 and 12 yards struck is years ahead of the field. It brings you a new high in scraper performance and low cost yardage that has made Euclid the fastest growing scraper line in the industry.

Hydraulically controlled lever action provides fast, positive and independent operation of bowl, apron and ejector. Down time and delays caused by cable breakage are completely eliminated. All major components and the entire power train are readily accessible for easy servicing and maintenance.

Have your Euclid Dealer give you facts and figures on the S-7 and S-12 so you can compare them with your present equipment . . . you'll find that *Euclids are your best investment.*

7 yds. struck . . . 8 yds. at 3:1 slope
9 yds. heaped at 1:1 . . . 18.00 x 25
with 21.00 x 25 optional . . . 143 h.
. . . NoSpin differential . . . non-stop
180° turn in 28 ft.

Built Better Roads Today — For a Greater America — See you at the ROAD SHOW CHICAGO Jan. 28-Feb. 2, 1957

Easy maneuverability of the S-7 makes it a versatile earthmover for a wide range of work. Full hydraulic steering permits non-stop turns in only 28 feet . . . enables the unit to get in and out of close quarters. Here a load of topsoil is being spread at a New Jersey housing project.

With its low, wide bowl and adjustable 4-section cutting blade, the S-7 is a fast, easy loader . . . picks up heaped loads without pusher assistance in good materials. This "Euc", equipped with cab, is working on a big land leveling project in the state of Washington.

EUCLID DIVISION GENERAL MOTORS CORPORATION, Cleveland 17, Ohio

Clementina, Ltd., 2277 Jerrold Ave., San Francisco 24, Calif., or use the Request Card at page 18. Circle No. 28.

International Harvester names engineering head

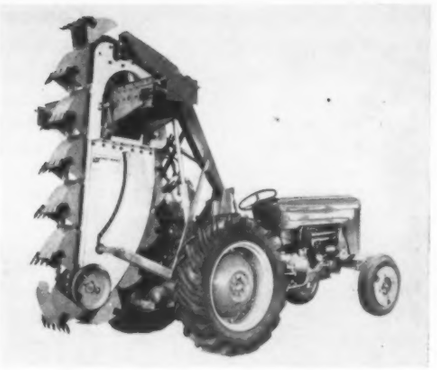
The former assistant director of engineering for International Harvester Co., Chicago, Ill., Howard S. Manwaring, has been appointed to the position of director of engineering. In addition to his regular administrative duties, Manwaring will work particularly with motor truck and construction-machinery activities.

Trencher now adapted to M-H tractor

■ The Everett trencher is now available for use with the Massey-Harris MH-50 tractor, as well as with Ford or Ferguson tractors.

The Model 60 trencher digs clean, smooth trenches as deep as 5 feet and as fast as 300 fpm. The Model S-35 equals the work of 25 pick-and-shovel men, the manufacturer reports.

For further information write to Earth Equipment Corp., 2036 Sacramento St., Los Angeles 21, Calif., or use the Request Card at page 18. Circle No. 116.



◄ The Everett Model 60 trencher mounted on a Massey-Harris MH-50 tractor.

S-7 and S-12
"EUC" Scrapers

12 yds. struck . . . 14 yds. at 3:1 slope . . . 16 yds. heaped at 1:1 . . . 26.5 x 25 tires . . . 218 h.p. . . . 9′ 6″ width of cut . . . NoSpin differential non-stop 180° turn in 31 ft.

Big 26.5 x 25 tires, NoSpin differential, Euclid planetary drive axle and 218 h.p. engine give the S-12 plenty of power and traction to pick up heaped loads in a hurry. On this Tennessee highway job, the 28 mph top speed with capacity payloads was a big factor in maintaining high production at low cost.

Contractor preference for "Euc" Scrapers results from pay-off performance on the job.

Rugged construction of the S-12 keeps down time to a minimum—it's designed for work on the toughest jobs with big push tractors. Heaped loads of heavy clay—15 yds. and more—were picked up in a short travel distance on this South Carolina railroad grading project.

Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE

GM MORE POWER FOR YOU

Skids stabilize plow on improved cable layer

■ Stabilizing skids that resemble airplane wings have been added to the new cable layer announced by the Philadelphia Electrical & Mfg. Co. The unit is drawn by a tractor or bulldozer.

According to the manufacturer, the skids not only prevent the Pemco

The Pemco cable layer features skids to stabilize the plow and keep it from digging in.

cable layer's rocking from side to side, but also keep it from digging and make it easier to handle. The plow digs the trench, lays the cable, and backfills in one operation.

The plow will lay cable under most conditions, the manufacturer states. It is 8 feet long, weighs about 800 pounds, and is operated by two men while a third feeds cable. It lays jute-covered or parkway cable up to 1¼ inches in diameter to a depth of 16 inches.

For further information write to the Philadelphia Electrical & Mfg. Co., 1200 N. 31st St., Philadelphia 21, Pa., or use the Request Card at page 18. Circle No. 104.

Turnpike lighting

■ Lighting for expressways, turnpikes, tunnels, and bridges is detailed in a catalog from General Electric Co. Recommendations are given for lighting hazardous areas, service areas, interchanges, and toll plazas. Data is given on the fundamental aspects of roadway lighting, design objectives, etc.

To obtain Catalog GED-3001 write to General Electric Co., 1 River Road, Schenectady 5, N. Y., or use the Request Card at page 18. Circle No. 176.

Joy names manager

The Joy Mfg. Co., Pittsburgh, Pa., has appointed William Hanson, Jr., manager of conveyor products at the firm's new Philadelphia plant. With Joy since 1951, he had been assistant manager of conveyor products before his present appointment.

←For more facts, circle No. 226

Plastic sealer doubles life of concrete forms

■ A single application of Technicote Formcote has enabled a contractor to use the same concrete forms 20 times or more, thus doubling the life expectancy of the plywood.

The one-application feature of this plastic-compound form coating was inadvertently misrepresented in a case history which appeared in the June issue of CONTRACTORS AND ENGINEERS.

The Horn Construction Co., Inc., Merrick, Long Island, N. Y., used 28 to 92-foot plywood forms in constructing 70 piers for the Hudson County extension of the New Jersey Turnpike. Specifications called for the forms to be oiled before each pour, and the contractor had expected to make no more than 10 pours with each set of forms.

One application of Technicote Formcote prepared these plywood pier forms for an average of twenty uses by Horn Construction Co., Inc., on the New Jersey Turnpike.

Just one application of Technicote Formcote, however, prepared the forms for an average of 20 uses. Applied by brush to seal the plywood from both water and oil, the compound prevented the absorption of oil and moisture so that the boards remained solid and light. No dark oil stain marred the finished concrete, either.

Roy Mattson, concrete superintendent for Horn, reports that the use of this single coating of Technicote actually doubled the life of the forms used on this $4.5 million project.

For more information about Technicote Formcote write to L. J. Kissling & Son, P. O. Box 21, Long Island City, N. Y., or use the Request Card at page 18. Circle No. 110.

Bucket loaders

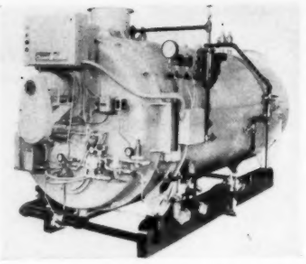
■ Three bucket loaders, the Models 75, 77, and 75-SBC, manufactured by George Haiss Mfg. Co., Inc., are described in a bulletin. The Models 75 and 77 are basically alike, but as a diagrammatic picture points out, the 77 offers a 2-foot 2-inch greater discharge height than the 11-foot 11-inch maximum discharge height of the 75. Model 75-SBC has a maximum discharge height of 12 feet. All three models have a loading capacity of 3 cubic yards per minute. Cutaway pictures of parts, specifications, and job photos are included in the bulletin.

To obtain Bulletin No. P231 write to George Haiss Mfg. Co., Inc., 350 Fifth Ave., New York 1, N. Y., or use the Request Card at page 18. Circle No. 39.

Combustion noises low in new 200-hp boiler

■ A new 200-hp self-contained boiler has expanded the Cleaver-Brooks line to include 12 sizes from 15 through 200 horsepower. The new boiler is offered in the Series 100, for light oil; Series 200, for No. 2 oil and gas; Series 400, for No. 6 oil and gas; Series 600, for No. 6 oil; and Series 700, for straight gas.

The CB 200 has a full modulating burner, a silent oil pump, and davited rear and front doors which expedite the tube removal and cleaning. A caseless fan that draws combustion air into a large plenum chamber keeps the operating noise of the boiler to a minimum.



The new Cleaver-Brooks 200-hp self-contained boiler is available in 6 series for oil and/or gas operation.

The davited front and rear doors on the CB 200 may be swung open after removing a few bolts at each end. Tube sheet and tubes are accessible for cleaning without removing the heavy-duty refractory which is contained in the rear door. The doors are sealed with preformed asbestos gaskets. Combustion air passes through the front head and keeps the burner and control panel cool.

For further information write to the Cleaver-Brooks Co., 326 E. Keefe Ave., Milwaukee 12, Wis., or use the Request Card at page 18. Circle No. 26.

Rotary highway mower designed for safety

■ Safety is the key consideration on the new Sun-Mastr MS 260 rotary mower available from Sunflower Industries, Inc. The rig is recommended for highway maintenance work.

The Sun-Mastr hitches to any tractor and mows a 60-inch swath. It is adjustable for cutting heights up to

Dump in *one second* with Dumptor®

On the above operation, Koehring Dumptor drives up to the hopper, body forward. Operator trips the body-release lever, and *gravity* tilts the 6-yard body 70 degrees. One second later the load is out, and Dumptor is on its way back for the next load. Because there is no waiting for slow-acting body hoists, *gravity-dumping* saves 15 to 25 seconds on every round trip. This adds up to a substantial increase in extra yards per hour. For instance — take a typical 1,000-foot haul, where you normally would make 16 trips an hour. By saving an average of 20 seconds dump-time on each trip, Dumptor gains 320 seconds, or 5.3 minutes more productive haul-time an hour. You get 17½ trips, instead of 16. This, alone, adds 9% to hourly production. What's more, there are no expensive hoist-replacement parts, or hoist maintenance time. *Gravity-dump* never wears out, never balks. You get the same one-second dumping *every time,* under heaviest loads, in all temperature extremes. Better check what this can mean in lower costs, and increased production on your hauling operations. Get the complete Dumptor story from your local Koehring distributor. *Call him today.*

The Sun-Mastr rotary mower is recommended for roadside maintenance work.

14 inches. Heavy-duty springs hold special outer safety shields in place and eliminate the need for chains or belting, the manufacturer points out.

The unit is equipped with a Borg-Warner 40-hp gear box. Blades are heavy forged spring steel, double edged. A choice of friction-type or spring-loaded slip clutch is available. Tires are either semipneumatic or pneumatic.

For further information write to Sunflower Industries, Inc., P. O. Box 482, Olathe, Kans., or use the Request Card that is bound in at page 18. Circle No. 154.

Torque converters in 100 to 1,000-hp range

■ Single-stage torque converters in the 100 to 1,000-hp range in six basic sizes and 17 power capacities are available from the National Supply Co.

The converters are recommended for use with construction, excavating, and earth-handling equipment. They can be mounted in any position.

The three hydraulic elements—pump, turbine, and stator—are aluminum alloy castings. Precision-made fluid passageways and blade contours give the converters an unusually high efficiency in power transmission, the manufacturer points out.

For further information write to the National Supply Co., 2 Gateway Center, Pittsburgh, Pa., or use the Request Card at page 18. Circle No. 155.

This National torque converter covers a range of from 160 to 330 input horsepower at 900 rpm.

Plenty of power on the haul — You get better than 6 h.p. for every ton of loaded weight when you haul with heavy-duty Dumptor. That's why it accelerates fast, pulls through soft ground, up ramps and grades with less shifting — climbs 24% grades fully loaded. When hauling heavy materials, extra horsepower means extra load-carrying capacity.

No-turn shuttle hauling — Dumptor solves problems of operating in tunnels, along overhead trestles, or narrow haul roads. There is no need to turn, because it travels with equal ease, power and speed in either direction. No-turn hauling offers a big production advantage, too. Every turn saved cuts 15 seconds off cycle time, increases output.

Easy-loading target — Big, 64 square-foot body opening permits loading Dumptor over the side or either end. This saves spotting time, reduces spillage. Heavy duty body is built for rock. Top edge and bottom are box-beam constructed. Sides and ends are rib-reinforced. In fact, Dumptor has a ton of strength for every ton of payload capacity.

Time-saver on stockpiling — Dumptor puts stockpiling on a fast shuttle-haul basis — eliminates turning on top of pile. Notice how instant dumping action kicks the load out over edge of pile — saves a lot of dozer clean-up. Free-swinging kick-out pan breaks load suction in wet, sticky materials, bolts down to floor when handling rock.

KOEHRING COMPANY, Milwaukee 16, Wis. Subsidiaries PARSONS KWIK-MIX • JOHNSON KOEHRING-WATEROUS LTD.

F641

For more facts, use Reader-Reply Card opposite page 18 and circle No. 227

Portable crushing plant mounts on steel chassis

■ A single-pass portable crushing plant particularly recommended for use in building and maintaining municipal and county roads, and for use by contractors on smaller construction projects is announced by Pioneer Engineering Works, Inc. Minneapolis, Minn.

Designed for moderately high production at low initial and small maintenance costs, the No. 8 plant is mounted intact on a single, rubber-tire, steel chassis. It consists of a 24G reciprocating plate feeder, a 6-foot hopper and grate, 24-inch-wide feeder and delivery conveyors, a 3×6-foot, 2-deck buzzer screen, and either a 1024 (standard) or 1036 jaw crusher. A sand delivery conveyor (optional) can be added to either side if desired.

Other optional features include rejection of sand by a 1⅓×20-foot sand conveyor, either a front dolly or semitrailer hitch, and various systems of feeding and delivering material. Before moving the plant from one job to another, only the sand delivery conveyor, if used, need be detached. The front delivery conveyor is hinged to fold back.

For further information write to Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn., or use the Request Card that is bound in at page 18 of this issue. Circle No. 6.

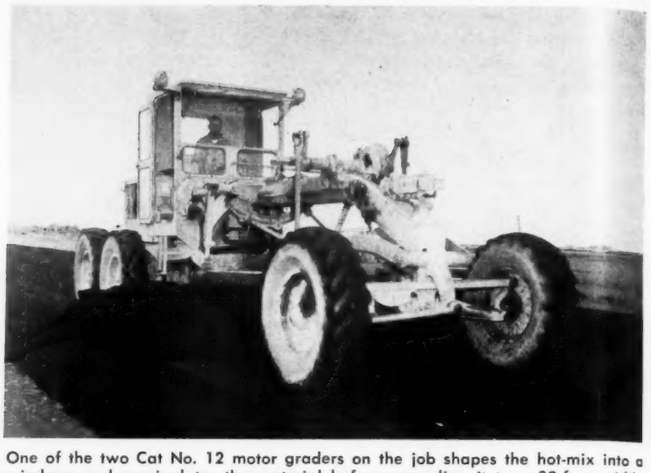
Lincoln plans expansion

The Lincoln Electric Co., Cleveland, Ohio, has initiated an $8 million expansion program for the manufacture of arc-welding machines and electrodes. Already under way, the entire project is scheduled for completion within the next three years.

The expansion will provide 60 per cent more space at the Cleveland plant, and extensions will be made on the existing building.

The company will also build new plants in France and Australia to replace the present facilities there, and is adding to its Canadian facility.

Since traffic uses shoulders and the road itself during construction, the roadway is swept clean and tacked with asphalt cement before this Ford truck dumps hot-mix for the leveling course. *C&E Staff Photos*



One of the two Cat No. 12 motor graders on the job shapes the hot-mix into a windrow and manipulates the material before spreading it to a 32-foot width. Both graders work sections from a quarter to a half mile long.

Above, one of the three Huber 8 to 12-ton units on the project completes the rolling job.

Asphaltic material is heated in tank cars at the siding by a Murray scotch marine boiler at right. Additional heat is supplied by the Grace booster on the International truck, left.

Stepped-up asphalt plant keeps hot-mix job moving

Combination of standard and shop-adapted equipment, all portable, makes for high-production paving

The job of placing a two-course hot-mix bituminous retread over an old road-mix highway surface gave Haggart Construction Co., Fargo, N. Dak., an opportunity to develop the full output of its "souped-up" Cedarapids G-60 bituminous mixing plant.

When Haggart started resurfacing 11 miles of U. S. 2 east of Lakota, N. Dak., under a $202,400 contract awarded by the North Dakota State Highway Department, he stepped up production of the big all-electric plant by adding a second dryer to it. This plant did a fast job of turning out the 26,495 tons of material for the bituminous leveling course, which ranges up

The double-dryer arrangement boosts plant production above the 180-ton-per-hour mark. Aggregates first move from the stockpile up the belt conveyor to the Madsen 72-inch x 28-foot dryer, and via a short hot elevator to the Cedarapids 88-inch x 28-foot dryer.

to 2½ inches in thickness, and 12,325 tons of material for the wearing course, which was laid 1½ inches thick over a 24-foot width.

All equipment portable

Haggart's setup—from the portable crane that erected the asphalt plant to the big trailer that carried the Barber-Greene finisher—included an unusual combination of standard manufacturer's products and shop-made or adapted machines. Together, the units formed a well planned paving spread capable of operating at a high rate of production. Moreover, the spread was practically self-sufficient—an important factor in parts of the Dakotas, where towns and even power lines are sometimes widely spaced.

Everything in the spread—from the huge office trailer to the big GM generating plants—was portable. Large units, like the Hy-Way hot oil heater at the plant and the 125-hp Murray scotch marine boiler at the rail siding, as well as many other units were mounted on their own trailers. Small units like the Quincy air compressor which supplied air for the pugmill gates and a gasoline-powered asphalt pump used as an unloading booster were also mounted on their own two or four-wheel trailers. All this portability saves the contractor many hours as the plant moves from one location to another.

Crane erects plant

One of the first shop-built rigs to go into use on a new plant site was the erection crane. Powered by a Hercules engine, the two single-drum winches of the crane had a lifting capacity of 8 tons—enough so that the rig could erect all units of the plant. The crane was towed around the site by one of the Allis-Chalmers HD-14 tractors that later worked the stockpile.

The main tower of the plant carried a four-deck 4 × 14-foot screen at the top; under the screen were the hot-material bins and the batching scales. Air-operated gates on the hot-material bins and on the pugmill speeded the weighing and dumping operations. Air was supplied by an electric-powered Quincy compressor mounted on a small four-wheel trailer parked beside the tower.

The other elements of the plant were arranged so that hot, dry materials flowed rapidly and smoothly to the hot elevator beside the tower. Aggregates were dozed from the stockpile to a trap by two Allis-Chalmers HD-14 tractor-dozers. The trap, feeder, and 30-inch × 55-foot belt conveyor were incorporated into a shop-built, completely self-contained unit. The conveyor transported the aggregates to a 72-inch × 28-foot Madsen dryer. Fine sand from a separate stockpile was added into the dryer by a 24-inch × 50-foot conveyor.

The Madsen dryer, an auxiliary to the Cedarapids plant, was arranged in tandem with the 88-inch × 28-foot Cedarapids dryer. All of the aggregates first went through the Madsen dryer, then were transferred by a small hot elevator to the Cedarapids dryer, which discharged the hot, dry materials into the boot of the hot elevator. This tandem operation made it possible to heat and dry the rather wet materials—which were quite high in fines—at a rate fast enough to keep the rest of the plant in continuous operation. Both dryers were fired by burners using No. 5 fuel oil.

At the plant, fuel oil was stored in a 10,000-gallon tank, and asphalt cement in a 12,000-gallon tank. Both of these tanks, together with the pumps and other asphalt-handling equipment, were heated by 350-degree heat-transfer oil supplied by a Hy-Way hot

(Continued on next page)

Asphalt cement is transferred from a 2,700-gallon capacity insulated tank trailer to the storage tank by two pumps—one on the tank trailer, and one on its own trailer at center. Working in tandem, the pumps speeded this operation.
C&E Staff Photo

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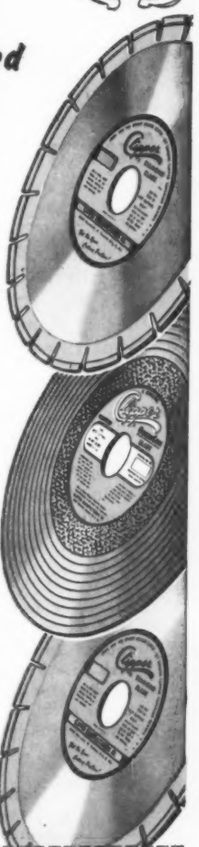

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 228

An all-in-one service truck operated by one man services the company's fleet of equipment daily. It carries lubricating oil, gasoline, and diesel fuel, and has Alemite equipment for dispensing transmission grease, chassis lube, oil, and air. Water is carried in a tank just behind the cab. *C&E Staff Photo*

(Continued from preceding page)

oil heater. The heater, mounted on its own trailer and fired by an Iron Fireman oil burner, was completely automatic in operation.

Practically all of the plant units were operated by electric motors. These were supplied with power by two GM 175-kw diesel-generator plants, each of which was powered by twin 6-71 GM diesel engines. The big generators were carried on special trailers, and these were parked far enough away from the plant so that the generators were out of the worst of the dust. Fuel tanks for the generators were mounted on small trailers parked beside the generators. While the original plant was rated at 180 tons per hour, the "souped-up" model had no difficulty topping this production figure.

Asphalt-handling equipment

Asphalt cement was received by rail at the siding in Lakota, where a 125-hp Murray scotch marine boiler, fired by a Peabody burner, supplied steam for heating the tank cars. Two boosters, a Cleaver-Brooks and a Grace, provided additional heat for the material and transferred it to a 5,000-gallon tank-trailer pulled by an International L-190 tandem-axle truck. Another 2,700-gallon insulated tank-trailer also assisted on the asphalt haul. Fuel oil was delivered in a 4,000-gallon tanker.

At the plant, the asphalt was transferred from the tank trucks to the big storage tank by two pumps working in tandem. A pump on the trailer of each tanker pumped the material to a gasoline-powered pump working beside the storage tank. This booster setup made fast work of unloading the transports, making it possible for them to handle five to six cars of material per day.

Aggregates for the mix were produced in a gravel pit about four miles from the plant, where a Diamond Model TV40 crushing plant operated. Allis-Chalmers HD-20 and HD-21 tractors dozed the gravel to the trap feeding the plant, which contained a 10×36-inch jaw crusher and a set of 20×30-inch rolls. The secondary crusher was arranged in closed circuit with a three-deck 4×12-foot screen that delivered minus ¾-inch material to the loader belt and returned oversize to the crusher. The output from the plant kept a fleet of dump trucks busy making the 4-mile haul to the stockpile at the asphalt plant.

Graders lay leveling course

Operations started on the road when Caterpillar No. 12 motor graders cut sod away from a strip about 7 feet wide on each side of the old oiled road surface. This area was then shot with MC-1 cutback asphalt at a rate of 0.35-gallon per square yard. Then the old road surface was tacked with 150 to 200-penetration asphalt cement before the leveling course was put down. Two distributors shared the work; one was a 2,500-gallon trailer-mounted machine pulled by an International truck, the other was a 1,000-gallon Rosco distributor mounted on an International truck.

The leveling-course mix, made with ¾-inch aggregate and fine sand filler, contained 5.7 per cent of the 150 to 200-penetration asphalt. Hot-mix was transported from the plant to the road by Haggart's fleet of 19 International and Ford dump trucks augmented by seven or eight hired trucks. When the trucks had dumped the mix in a series of piles down the center of the roadway, the two Caterpillar No. 12 graders shaped the piles into a windrow, and then spread the material over the roadway to a width of 32 feet. Both graders carefully worked the material out over this full width, manipulating it back and forth until the desired crown and grade were obtained.

The graders worked a quarter to

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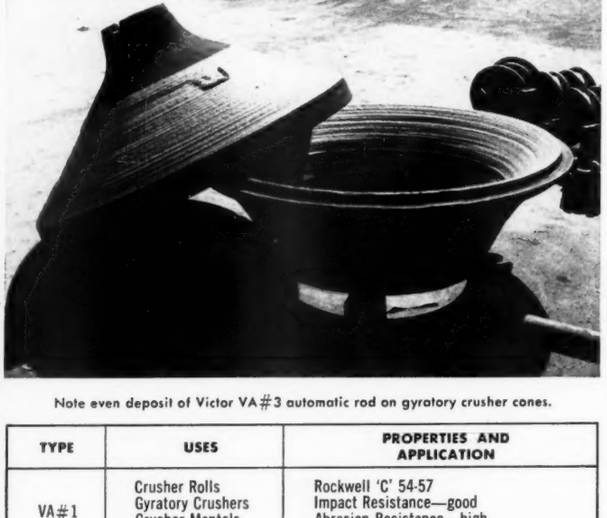

Note even deposit of Victor VA#3 automatic rod on gyratory crusher cones.

TYPE	USES	PROPERTIES AND APPLICATION
VA#1	Crusher Rolls Gyratory Crushers Crusher Mantels Scraper Blades	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high AC-DC submerged arc or DC open arc
VA#2	Pinch Rolls Tractor Idlers Tool Joints Coiler Rolls	Rockwell 'C' 50-52 Impact Resistance—good Abrasion Resistance—good Submerged arc only Suitable for multiple passes
VA#3	Roll Crushers Gyratory Crushers Impellors Mill Guides	Rockwell 'C' 54-57 Impact Resistance—good Abrasion Resistance—high For use where abrasion is severe Submerged arc only
VA#4	Tractor Rollers Sheave Wheels Tractor Idlers	Rockwell 'C' 25-28 Impact Resistance—excellent Abrasion Resistance—good Submerged arc only Suitable for multiple passes Machineable
VA#5	Tractor Rollers Sheave Wheels Tractor Idlers Grader Blades	Rockwell 'C' 34-38 Impact Resistance—high Abrasion Resistance—good Suitable for multiple passes Submerged arc only
VA#6	Crane Wheels Roll Necks Pump Sleeves	Rockwell 'C' 38-41 Impact Resistance—high Abrasion Resistance—fair Suitable for multiple passes Deposit machineable Submerged arc only
VA#7	Excellent base for high alloy application. Mine Car Wheels	Rockwell 'C' 36-42 Impact Resistance—excellent Abrasion Resistance—good Suitable for multiple passes Deposit machineable Submerged arc only
VA#8	Tool Joints Grader Blades Scraper Blades Roll Crushers	Rockwell 'C' 51-54 Impact Resistance—high Abrasion Resistance—high Submerged arc only
VT#60	Tool Joints Grader Blades Scraper Blades	Automatic Tungsten carbide wire Abrasion Resistance—excellent (maximum) Deposits are heterogeneous Open arc—DC reverse only

Rod diameters 1/8", 5/32" and 3/16". Standard coil size, 22-1/2" inside diameter, 4" wide, approximate weight 100 lbs.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 229

a half-mile-long section at a time and as soon as a section had been shaped, it was rolled by three Huber 8 to 12-ton rollers. Although several hours elapsed from the time the first loads were dumped on the roadway to the time the rollers got started, the mix remained warm and workable and rolled out very well.

Since the traffic was carried through the job, and vehicles were forced to use shoulders part of the time, a great deal of dirt was carried onto the roadway. This meant that the old surface as well as the leveling course had to be carefully swept before they could be tacked. Here again Haggart's shop came up with a time-saving machine, a self-propelled broom. Effective, but odd in appearance, the machine was fabricated from parts of an abandoned truck chassis. The broom, mounted under humpbacked frame, was powered by a Wisconsin air-cooled engine. The Chevrolet engine propelling the rig was mounted over the rear axle it drove. One man operated the rig, which had greater manueverability than the customary tractor-drawn broom.

When the leveling course had been carefully swept, it was given a fog tack coat of asphalt before the wearing course was laid. The mix for the wearing course was quite similar to that for the leveling course, but it contained up to 6.8 per cent asphalt. A Barber-Greene finisher laid the mix in two 12-foot lanes to make a finished 24-foot pavement. The 1½-inch surfacing was compacted by the same rollers that were used on the leveling course.

Trailer hauls paver back

When the Barber-Greene finisher completed half a day's run, it was loaded on a special oversize tilt trailer and towed back to the starting point to begin laying the other lane. The use of this big trailer with its 10×18-foot bed saved much time which would otherwise have been consumed in running the machine back under its own power.

The finished roadway was given an armor coating consisting of a seal coat and application of chips. One of the distributors applied the RC-3 cutback asphalt seal at the rate of 0.32-gallon per square yard, and ⅝-inch rock chips were spread in the fresh asphalt at a rate of 25 pounds per square yard and rolled.

All of the equipment, with the exception of trucks, was lubricated and fueled daily by one man with a specially equipped service truck. This rig serviced the machines working on the road, and those at the asphalt plant, at the track siding, in the sand pit, and in the gravel pit. Adapted from a standard bulk-tank wagon, the service truck had tanks to carry 400 gallons of diesel fuel, 100 gallons of gasoline, and 95 gallons of lubricating oil. A water tank was installed just behind the cab on one side, where a barrel rack is usually located. Four Alemite hose reels were installed in the rear side panels to dispense air, transmission grease, chassis lube, and fuel. Air was supplied by a compressor, which was mounted under the hood of the truck and driven by the truck engine. This very compact rig carried all the supplies and equipment needed for the daily servicing and fueling of all of the job equipment.

Personnel

Most of the workmen in this crew and many of their families live in house trailers and follow the plant from place to place. On this location, the trailer camp was set up on the outskirts of the village of Lakota. Also in the same camp was the huge office trailer that served as field headquarters. Measuring 10×55 feet, the trailer is one of the largest mobile offices in existence. It contains a large front office where the job records are kept, and a private office for the job superintendent.

Supervisory personnel for Haggart Construction Co. included superintendent Joe Simon, plant foreman John Schmit, road foreman John Castle, crusher foreman Ed Dahlman, oil foreman Herman Schmit, and master mechanic Leonard Tomek. Representing the North Dakota State Highway Department was resident engineer Lloyd Thompson. The project was under the supervision of the Grand Forks Division of the department. J. P. Kennedy is district engineer, and A. N. Ault is division construction engineer. Materials engineer for the department is W. A. Wise, and construction engineer is F. H. Brasie. Chief engineer is Mark Wynkoop. S. W. Thompson is highway commissioner.

THE END

Three-wheel rollers

■ Two Buffalo-Springfield 3-wheel rollers are described in a catalog from the company. They include the Model VM-31D, in the 10 to 14-ton class, and the Model C VM-32D, in the 12 to 15-ton class. According to the catalog, both models are equipped with power roll brakes, four-speed transmission, hydraulic steering, and low-torque clutches. All mechanical parts of the rollers are described. Data is included on optional equipment. Tables contain the dimensions, specifications, weights, and compression ratings of the rollers.

To obtain Form S-72-156 write to the Buffalo-Springfield Roller Co., 1210 Kenton St., Springfield, Ohio, or use the card at page 18. Circle No 69.

GULF PRODUCTS and FINE SERVICE

keep equipment rolling on New York State Highway Project

Bero Construction Corporation, Buffalo, N. Y., is constructing for the New York State Highway Department a 4-lane bypass for U. S. Route 20 at Canandaigua, New York. 75% of the 2.25 miles of new highway is being laid over swamp land, and approximately 303,000 cubic yards of excavation are required.

Bero Construction Corporation is mighty careful about controllable costs, particularly the kind attributable to excessive wear, below par equipment performance, and mechanical delays. And that is one important reason why this prominent contractor selects Gulf as a supplier of petroleum products on their many jobs, like the one pictured here.

The Bero people have found that Gulf quality lubricants and fuels contribute to top equipment performance and low maintenance expense . . . and they appreciate Gulf's prompt delivery service and helpful engineering counsel.

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 230

If the load can be placed under its boom, the new Hyster Model KE Karry Krane can lift it up to a weight limit of 10,000 pounds.

Mobile crane handles loads of any shape

■ A new mobile crane, that is reported to be able to move a load of any shape that can be placed under its boom, and is designed to work both indoors and out, is announced by the Hyster Co. The Model KE Karry Krane has a 10,000-pound capacity and replaces Hyster's Model KD.

Power steering, trunnion-type steering wheels, short turning radius and rounded rear-end design enable the unit to maneuver easily and quickly, the manufacturer states. The rig is available with several optional boom lengths adjustable to six positions. Hydraulic power for raising and lowering the boom is optional.

The new unit is operated with automotive-type driving controls. One spring-loaded lever controls the hoist drum which, when released, automatically returns to neutral, engaging a brake to hold the load. Shifting is accomplished through a synchronizing constant-mesh transmission.

Loads can be lifted at the rate of from 75 to 108 fpm and lowered at speeds of from 165 to 240 fpm. A heavy-duty gasoline engine develops 35 per cent greater torque and greater power at lower rpm than the old Model KD. An 11-inch clutch, brakes with 190 square inches of braking area, and 7.00×20 drive tires are also featured.

Boom lengths of 9, 10, and 12 feet are available with optional counterweights. Either a single-part hoist line for capacities up to 6,000 pounds, or a two-part line for capacities up to 10,000 pounds, is offered. An overhead guard is optional.

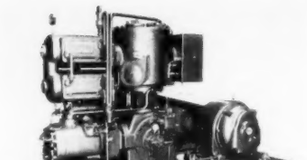
For further information write to the Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg., or use the Request Card at page 18. Circle No. 113.

New sales engineer at Greer Hydraulics

James W. Rigley is working in the New Jersey and New York State territory as a new sales engineer in the Products Division of Greer Hydraulics, Inc., Jamaica, N. Y.

Previously, Greer was an industrial sales representative with A. Schroeder's Son, a division of Scovill Mfg. Co.

The Atlas AR 3 cfm skid-mounted compressor, one of the six L-shaped two-stage double-acting-type rigs in a heavy-duty series.



Heavy-duty compressors have steel skid mounts

■ The full line of Swedish-made Atlas Copco Series AR compressors is now available from Atlas Copco Pacific, Inc.

The heavy-duty AR Series includes six models ranging in size from 330 to 3,220 cfm—all of the L-shaped, two-stage, double-acting, fully counterbalanced type. Units to 800 cfm in the AR Series are available mounted on steel skids.

Other construction features include annular-type valves to permit maximum air passage, and easy operating double-row spherical roller bearings in the crankshaft journals.

For further information write to Atlas Copco Pacific, Inc., 930 Brittan Ave., San Carlos, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 124.

Ingalls opens new plant

The Ingalls Iron Works Co., Birmingham, Ala., has opened a new office building and expanding aisle for fabricating steel. Located in Verona, Pa., the plant is the first outside the Pittsburgh area to be sheathed with stainless steel.

The expanded working area includes an 80×700-foot working aisle, new shipping and receiving yards, and enlarged parking facilities. Curtain walls enclosing the three-story 40×110-foot building are 1¾ inches thick. The building is completely air conditioned and has electric air cleaning.

A steel-covered breezeway will connect the office with the Aisle 5 building. Production capacity has been increased by 1,500 tons per month.

ALLIS-CHALMERS

new TS-260

power-matched for production

power-matched to capacity With more than 18 horsepower for every yard of struc capacity, the new TS-260 has plenty of power to move full loads at full speed—under all condition

power-matched to strength The TS-260 has the structura strength and balance to effectively utilize all of its horsepower . . . with extra capacity built int the clutch, transmission, final drives and drive axles . . . with a heavy, all-steel, box-type tract frame . . . and with proper over-all weight distribution.

New excavator available as truck-mounted crane

■ Production of a truck-mounted crane version of the Model 305 excavator has been announced by the Koehring Co. As a crane, it will lift loads of up to 25 tons; its road travel speed is listed at 30.2 mph.

According to the manufacturer, the Model 305 truck crane is easily adapted to any type of crane operation, including lift, clamshell, dragline, grapple, magnet, and pile-driving work. For special high-lift crane service, the standard 30-foot main boom can be extended to 100 feet. A jib boom up to 30 feet in length can be added.

The 305 truck chassis is provided with five main and two auxiliary forward speeds. Air brakes are built into each of the four double-tired rear drive wheels. Front and rear turn signals are built into the chassis, along with standard driving lights. The wheelbase has been increased to 205 inches with 9-foot axles to provide greater lift capacity over the side and rear.

A truck-mounted crane version of the Model 305 excavator is now available from the Koehring Co.

For further information write to the Koehring Co., 3026 W. Concordia Ave., Milwaukee 16, Wis., or use the Request Card at page 18. Circle No. 19.

New 40-foot plane is simplified rig

■ An automatically controlled 40-foot plane announced by Raymond Gurries Mfg. Co. eliminates the bulky superstructure normally found in planes of this size, yet is said to be even more accurate and rigid.

The new P-40 has a leveling length of 45 feet and a 10-foot bowl. The self-contained hydraulic pump is powered by universal drive to the tractor power takeoff. Elevation of the front and rear skid activates the Gurries linkage automatically to raise and lower the blade to keep it on a straight line.

The new Gurries P-40 plane.

This new plane may be easily transported by folding the rear frame and putting it into transport position. The rig can also be quickly converted into a leveler.

For further information write to the Raymond Gurries Mfg. Co., 1720 S. First Ave., San Jose, Calif., or use the Request Card at page 18. Circle No. 101.

Radiophone units

■ Trunk and dash-mounted radiophones operating on 6 and 12-volt electrical systems are featured in a bulletin from Motorola. Sensicon receivers, transmitters, and Twin-V power supplies are pictured and described. Various models of the radiophone operating on 25 to 54, 144 to 174, or 450 to 470 megacycles are listed.

To obtain Bulletin No. E-131 write to Motorola Communications & Electronics, Inc., Division of Motorola, Inc., 4501 Augusta Blvd., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 140.

Motor Scraper

200 hp
11 yd (struck)
14 yd (heaped)

nd profit on the job!

power-matched for speed The big Allis-Chalmers diesel engine provides high torque at both igh and low engine speeds resulting in smooth shifting and fast acceleration. And with plenty of ngine power, the TS-260 loads fast, hauls fast, dumps fast . . . moves big payloads at low cost, ven under tough conditions.

power-matched for operating ease Overlapping gear speeds all four gear ratios reduce gear shifting, speed work cycles. And with 90-degree steering for pid maneuvering in close quarters, it's easy for the operator to get the most out of the TS-260.

The new TS-260 gives you these four basic advantages . . . and many important new features

For more facts, use Reader-Reply Card opposite page 18 and circle No. 231

Fast work on floor forming saves two months on building job

Crews placing concrete for the 3¾-inch floor slabs work their way up the 13-story Tishman building. The four-man crew, placing the steel panels for the lightweight concrete floors, finished its job soon after steel was erected.

Floor and roof slabs of lightweight concrete for a new 13-story office building in Los Angeles, Calif., were formed with Tufcor high-tensile steel base panels that not only saved at least 60 days' time on the job, but also eliminated the need for shoring, and cut temporary flooring requirements in half.

Designed by Victor Gruen & Associates for Tishman Realty & Construction Co., the building has a structural steel framework and a skin of aluminum and glass. Both the north and south exposures have horizontal aluminum louvers topped with a plastered spandrel and glass. On the east and west sides, the aluminum louvers are vertical and are placed to full height both to control lighting and for contrast. One of the features specially designed for Tishman buildings in New York City—a demountable acoustic tile ceiling that can be taken down and replaced easily so that work can be done on such things as electric circuits and air conditioning ducts—was used in Los Angeles for the first time in this structure.

Speedy installation

The building, located on a 150× 146-foot site at 3325 Wilshire Blvd., has a structural steel framework that was fabricated and erected by Bethlehem Pacific Coast Steel Corp., Los Angeles. The framework consists of conventional steel columns with steel H-beam cross girders and tie members welded in place. Bethlehem used two derricks, each with 120-foot masts and American diesel-engine-driven hoists to raise the structural steel into place. Three floors were erected from one setting, then the derricks jumped three floors to place the next batch of steel. As the steel went up, it was joined by a crew of welders using 13 Lincoln 440-volt arc-welding machines.

On work of this type, it is usual for at least two upper floors to be covered with timber so that workmen below will be protected from sparks, molten metal, or falling objects. But only one floor had to be covered on this job, for the subcontractors erecting the Tufcor panels were never far behind the ironworkers.

The Tufcor panels, purchased from

CHECK IT FROM EVERY ANGLE

the New TS-260 is Designed for Low-Cost Dir

"Live action" hydraulics for sure control. Positive gear-driven pump provides constant live power for both steering and scraper operation. Full-flow filtering, cross relief valves and simple design make this an efficient, safe performer.

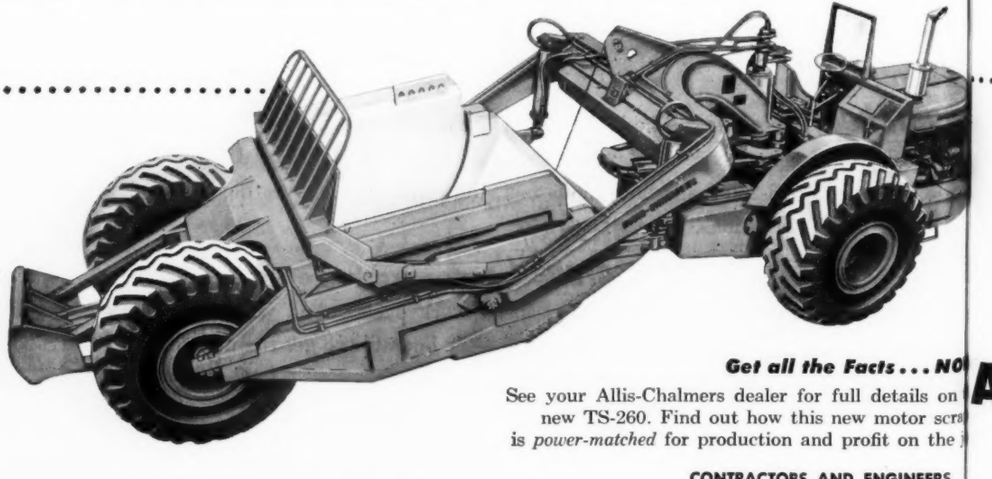
Positive 90-degree steering for close-quarter maneuverability. The steering wheel is direct-link connected to the steering valve. A 30-degree turn of steering wheel directs full pump flow to two double-acting steering jacks for fast, positive turns up to 90 degrees. For slower turning at high speeds, a slight turn of steering wheel provides a smooth, regulated response.

Double-safety brakes for positive stops. Big, four-wheel air brakes provide sure braking under full load at full speed . . . and an air reservoir system with emergency relay valve means positive braking safety.

"Boiling-action" loading for big payloa Combination of curved bowl bottom and offset cut edge provides a "boiling" action that eliminates . . . builds profitable, heaped loads.

Quick, clean spreading with high apron a forced ejection. Patented linkage moves apron ah and up when ejector goes forward . . . providing apron lift and exceptionally large opening for cl easy-to-control unloading.

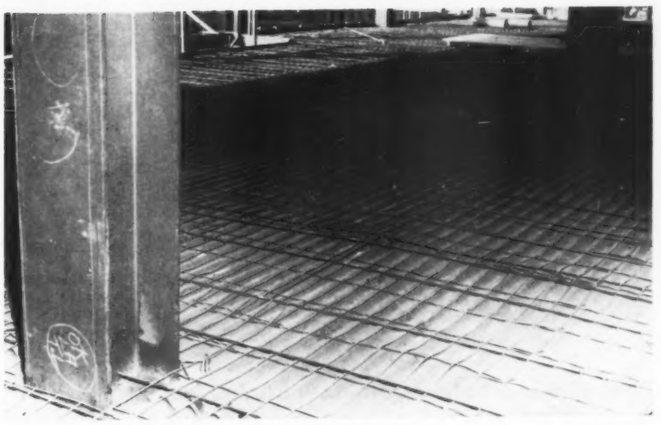
Balanced weight distribution for maxim traction, long tire life. When empty, 66 per of entire TS-260 weight is on front wheels—34 per on rear wheels. When loaded, each wheel supports e weight—providing excellent flotation and fast hau



Get all the Facts . . . NO

See your Allis-Chalmers dealer for full details on new TS-260. Find out how this new motor scra is *power-matched* for production and profit on the

High-tensile floor panels eliminate need for shoring; cut requirements for protective timber flooring



With reinforcing and electric conduit placed, Tufcor panels are ready for concrete. Two teams of two men each set the panels for a floor in three 8-hour days. One man handled the sheets while another spot-welded them to girders.

Norris Steel, Gardena, Calif., the West Coast distributor for Granco Steel Products Co., Granite City, Ill., were installed by Henry E. Robertson Co., Inc., working under a subcontract from C. L. Peck, Los Angeles, general contractor for the structure.

The steel base material, of tough temper high-strength sheets, was set and secured by a crew of four men, who split into teams of two. The ironworker picked up the 13-foot 4-inch or 14-foot 6-inch lengths of material and laid them across the girders, and the welder spot-welded each sheet to the girders with a Lincoln electric welding machine and a No. 5 Fleetweld rod.

This four-man crew, working under J. A. Turner, supervisor for Robertson, was able to finish an entire floor in three 8-hour working days. As soon as decking had been laid, reinforcing steel and electric conduits were placed.

Used on spacing up to 8 feet 6 inches, the 24-gage sheets deflected only ¼-inch after lightweight concrete had been placed for the 3¾-inch floor slabs. The minimum tensile strength of the panels was 80,000 psi.

Lightweight concrete

The speed of structural steel and Tufcor erection permitted the general contractor to schedule two concrete floors for completion one week, three for completion the following week, and then repeat the cycle.

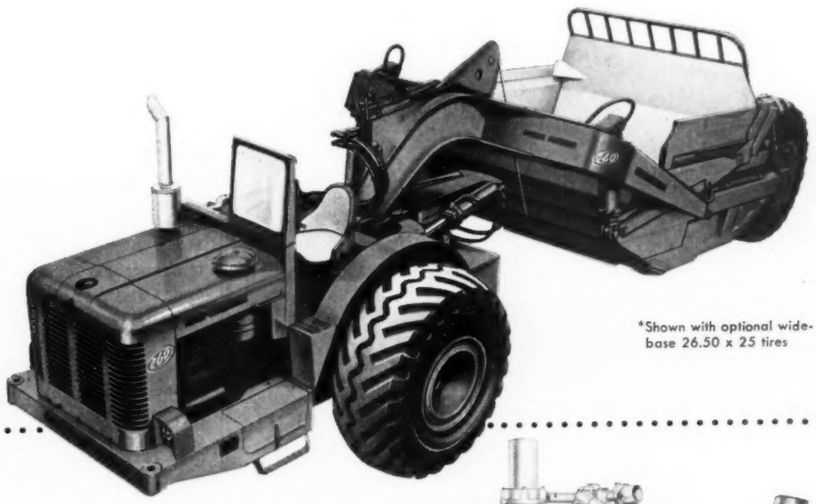
The concrete mix, turned out by a commercial batching plant, consisted of Rocklite aggregates, sand, and cement when the job started. However, when a teamsters' strike by workers for the Los Angeles County commercial rock producers threatened to slow down or shut down the job, the contractor used a mix containing a manufactured Rocklite sand instead of ordinary sand. The use of concrete containing this sand cut the weight of floor concrete to 100 pounds per cubic foot.

The old mix was a 3,000-psi design that called for 5.75 bags of cement per cubic yard and had a 5.5 water-cement ratio. The new mix, calling for Rocklite sand, made use of 6.25 sacks per cubic yard to provide a margin of safety, and a general increase in the strength of concrete was noted when this concrete was used.

Concrete was brought to the job in Challenge truck mixers, dumped directly to the hoisting bucket on a 178-foot hoisting tower, and raised to the proper floor by a two-drum American hoist driven by a Westinghouse 50-hp electric motor

Arriving at the floor where concrete work was being done, it was transferred to a small surge hopper. Three Whiteman concrete buggies, riding on runways, brought the material to its point of placement. This operation made it possible for about 35 cubic yards of concrete to be placed hourly. Less than five hours was needed to place the 165 cubic yards of concrete required for the 15,700-square-foot average floor of this building.

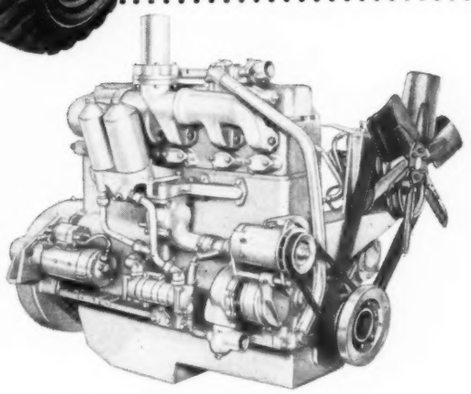
THE END



*Shown with optional wide-base 26.50 x 25 tires

Choice of tires to fit job conditions*. Standard 21.00 x 25 (20-ply) or optional wide base 26.50 x 25 (20-ply) tires provide a choice that insures carrying capacity and full flotation for steady going in all types of material.

Big 200-horsepower Allis-Chalmers diesel engine. The 844-cubic-inch piston displacement and conservative 200-horsepower rating of this outstanding diesel engine provides plenty of reserve for low-cost operation under all conditions. "Follow-through" combustion results in sustained power, low peak pressures ... smooth, steady performance.



New easy-shifting transmission. There's a correct gear ratio in the TS-260 transmission for every speed, every work condition. New clutch brake and gear overlap in all four speeds makes it easy to shift gears smoothly, maintain steady acceleration and full pulling power.

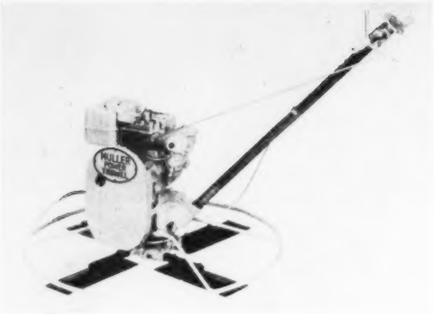
Heavy-duty power train. The TS-260 power train is designed to transmit high engine torque to the drive wheels with maximum efficiency. The engine, clutch and constant-mesh transmission are assembled as a unit to assure accurate alignment. Simplified removal of each individual component provides easy serviceability.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

A-C ALLIS-CHALMERS

ALLIS-CHALMERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 232



Using four blades instead of three, the new Muller power trowels are said to bring about a reduction in vibration and in the lateral pull away from the work.

Line of power trowels with four blades

■ A new line of power trowels that use four blades instead of the conventional three is announced by the Muller Machinery Co., Inc. The manufacturer states that four blades reduce vibration and lateral pull-away from the work, resulting in less fatigue for the operator and a smoother job of concrete finishing.

The trowels are available in 24, 29, 34, and 44-inch sizes. The units are equipped with Timkin bearings. Blade adjustment, engine throttle, and power throw-out are located at the top of the handle. Separate floating and finishing blades are standard equipment on all sizes.

According to the manufacturer, the four-blade machines permit earlier troweling of concrete, thus reducing the required setting period.

For further information write to the Muller Machinery Co., Inc., P. O. Box 248, Metuchen, N. J., or use the Request Card at page 18. Circle No. 121.

Need information equipment? See card at page 18.

Most Effective Compaction With Fewest Passes.....

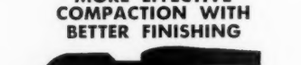
A 3-axle tandem roller, with a variable weight range from 14 tons (metal weight) to 20 tons fully ballasted with water, is now being built by GALION. In addition to the main compression or drive roll, it has twin guide rolls with synchronized hydraulic steering. You get up to 50% smoother finish rolling than with conventional tandems, and up to 60% greater tonnage of material can be compacted per day. You get faster and better compaction of joints and seams. Elimination of cross-rolling saves you time and money.

ROLL-O-MATIC
Torque Converter
DRIVE . . . is STANDARD EQUIPMENT

MORE EFFECTIVE COMPACTION WITH BETTER FINISHING

On level surfaces all rolls compact and finish.

With drive roll on high spot, weight of center guide roll transfers to other two rolls.



With center guide roll on high spot, all weight of end guide roll and part of compression roll weight transfers to center guide roll.

With rear guide roll on high spot, weight of center roll transfers to other two rolls.

TRANSFER OF WEIGHT PRINCIPLE

With the three rolls of the GALION 3-axle tandem roller operating on a plane, an effective transfer of weight occurs whenever one of the rolls hits a high spot in the surface being rolled. When this takes place, only two of the rolls are in contact with the surface. Therefore, the weight of the third roll transfers to the other two, thus bringing more compaction weight to bear on the high spot. This feature accounts for the extremely high compaction efficiency of the Galion 3-axle tandem roller.

GALION gives you the most effective and economical driving power obtainable. The ROLL-O-MATIC Torque Converter (GM - Allison) Drive differs from a fluid coupling drive. A fluid coupling transmission requires a manual gear shift mechanism, and the fluid coupling itself never multiplies engine power.

The Galion ROLL-O-MATIC Torque Converter Drive has no gear shift mechanism. Furthermore, it automatically MULTIPLIES the engine driving force by means of oil in motion instead of by transmission gears. It automatically APPLIES the driving force as the work demands. When the Governor Lever is moved to a selected rolling speed, the engine power will be applied and regulated AUTOMATICALLY — up hill, on the level, down hill, and around curves. Reversing action is velvet-smooth; shock loads are eliminated.

EYE-OPENING RESULTS

The Galion ROLL-O-MATIC Torque Converter Drive saves up to 25% in fuel, engine life is increased 35% and life of forward-reverse clutches 40-50%. Elimination of master clutch, gear shifting, and shock loads results in unequaled ease of operation. Rolling speeds from .8 to 5.5 m.p.h. are available.

For complete information, fill in and return the coupon.

Please send me literature on the Galion Rollers checked.

- ☐ 3-AXLE TANDEM
- ☐ 2-AXLE TANDEM
- ☐ THREE-WHEEL
- ☐ PORTABLE
- ☐ TRENCH

THE GALION IRON WORKS & MFG. CO., Dept. CE-86, Galion, Ohio, U.S.A.

PERSON_____

FIRM_____

STREET_____

CITY_____ STATE_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 233

Announce single-tooth ripper for large tractors

■ A new single-tooth, heavy-duty ripper for use with the larger tractors is available from Columbia Industrial Services, Inc. It is cast of high-grade alloy steel and is light enough for one man to handle.

The new ripper, designated the Model 2000-C, is adjustable and interchangeable on the Caterpillar D8 and D9, the Allis-Chalmers HD-19 and HD-20, the International TD-24, and other tractors of similar size and horsepower with blades of from 39 to 61 inches in height.

Recommended for the roughest construction jobs, the 2000-C features a wear collar of special design for greater protection to the leading edge of the shank. It is also equipped with self-sharpening, reversible, replaceable wear boots. In use, the unit gives long wear and keeps replacement costs low, according to the manufacturer.

For further information write to Columbia Industrial Services, Inc., P. O. Box 471, San Leandro, Calif., or use the Request Card at page 18. Circle No. 11.

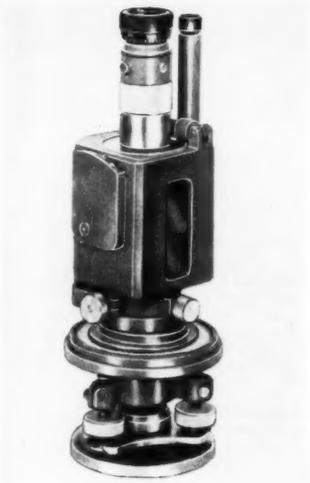
Cellular concrete

■ National-Crete, a process for making lightweight cellular concrete using preformed foam, is described in a catalog from the developer, National Foam System, Inc. The mixing process, physical properties, and directions for applying the mix are detailed. Charts show the compressive strength and K factor (insulating value) at different densities; the foam volume per cubic yard of concrete and per bag of cement; and the yield per bag of cement after foam has been added.

To obtain the catalog write to National Foam System, Inc., West Chester, Pa., or use the Request Card at page 18. Circle No. 158.

American Air Filter moves sales offices

The sales departments of the special military products and commercial portable heating sections of American Air Filter Co., have moved from Moline, Ill., to Louisville, Ky., the location of the firm's general office.



Portable theodolite weighs only 7 pounds

■ A portable theodolite that weighs 7 pounds and measures less than 3×8 inches is marketed by Wild Heerbrugg Instruments, Inc. The T-12 is recommended for a variety of construction and engineering uses.

The T-12 presents an upright image with a 5X magnification and an 8-degree field of view. The horizontal circle reading is to 1 foot and the vertical reading is to 2 feet. A prism under the telescope gives a vertical range of 72 degrees.

The instrument is supplied in a metal cylinder container, along with an extension-leg tripod.

For further information write to Wild Heerbrugg Instruments, Inc., Main at Covert Sts., Port Washington, N. Y., or use the Request Card at page 18. Circle No. 117.

Hose and couplings

■ Literature from B. F. Goodrich Co. discusses the firm's line of hose couplings and fittings, and water hose. Details are given on the methods of joining hose, clamps, menders and nipples. Data is included on long-length heavy-duty hose for such construction projects as road building, pile-driving, stripping, and sluicing. Sizes, pressures, coupling information, and construction features for each type of hose are listed in the specification sheet.

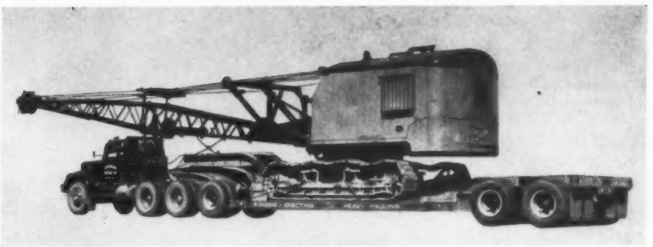
To obtain the literature write to B. F. Goodrich Co., 500 S. Main St., Akron, Ohio, or use the Request Card at page 18. Circle No. 167.

Line of crawler tractors

■ Literature on the International Harvester line of crawler tractors—the TD-6, TD-9, TD-14, and TD-18—is now available. The new feature of this line is the increased drawbar horsepower: the TD-6 now boasts a rating of 41.5; the TD-9, 54.5; the TD-14, 78.5; and the TD-18, 103. The chief parts of all the models are pictured and described, and complete specifications are included.

To obtain the literature write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 165.

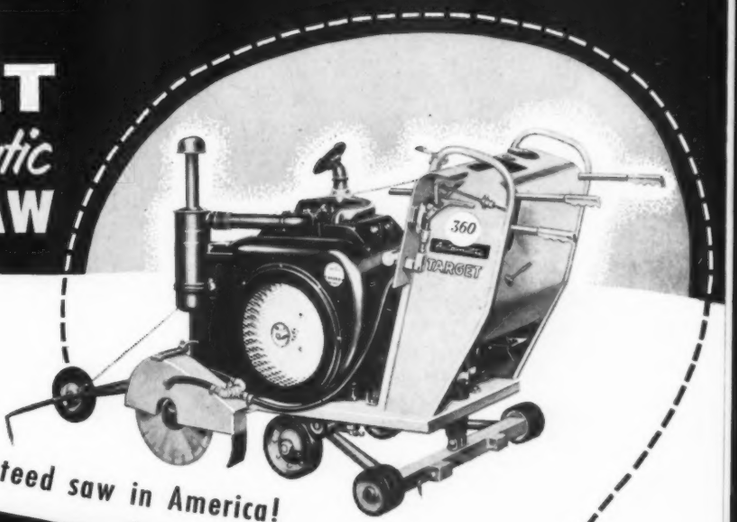
For more facts, circle No. 234→



TO ROUND OUT THE TALBERT LINE OF LOW-BED TRAILERS, models are now available with 8 or 16 tires in either 15 or 20-inch-diameter wheels, and fixed or removable goosenecks, with either level or drop decks. The Talbert Model TTD 60-RG trailer shown here is equipped with 16 20-inch tires and a Talbert single-axle jeep dolly, which increases allowable gross load where states permit. Owned and operated by Robinson Cartage Co., Grand Rapids, Mich., this rig easily loads and hauls a crane. With the Talbert removable gooseneck, front-end loading of the crane is accomplished by one man in about 5 minutes. For more details write to **Talbert Trailers, Inc.**, 7950 W. 47th St., Lyons, Ill., or use the Request Card on page 18. Circle No. 111.

we'll GUARANTEE you saw more concrete per day with

TARGET
36 H.P. *Automatic*
CONCRETE SAW



Only unconditionally guaranteed saw in America!

Over 17 million feet of concrete sawing experience backs this offer! . . . PLUS the reputation gained as ***the first manufacturer ever to build a 36 h.p. concrete saw.***

Our super-powered "360 AUTOMATIC" gives you:

* **Speeds instantly adjustable** from zero to 25 feet a minute with the TARGET AUTOMATIC TRANSMISSION.
* HYDRAULIC POWER-FEED control lowers blade fast, positively — raises blade instantly. Saves time on every cut.
* **Side mounted** SINGLE LEVER DRIVE CONTROL positions operator in full view of blade to permit "hairline" stops and starts — Fingertip blade depth adjustment.
* **The fastest maneuvering concrete saw ever designed.** Simply tilt effortlessly forward — pivot — and line up for the next cut.
* TARGET "ENGINEERED BALANCE" places full weight forward on blade — prevents "ride up." **Assures accurate blade depth at maximum speeds.**
* **Extra power** that lets you use the amazingly low cost TARGET ABRASIVE BLADES.

SEE THE 15 H.P. HYDRAULICALLY OPERATED "150"

Here's the low-cost "ALL PURPOSE" saw that handles the smallest patch job economically — yet has the power and speed for major construction projects. **Engine specially equipped for concrete sawing** with Stellite Inserts, Stellite Valve Seats, Valve Rotators, Flywheel Deflector Screen to deflect dust and sludge away from air intake.

WORLD'S LARGEST SELECTION OF DIAMOND & ABRASIVE BLADES

NOW . . . the completely NEW TARGET TUNGSTEN-CARBONADO Diamond Blades for green and cured concrete. And the amazingly low-cost TARGET ABRASIVE "SAFETY" Blades **for wet or dry sawing!** World's largest choice in every diameter and thickness.

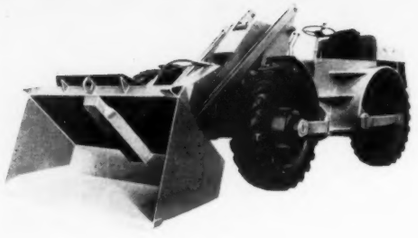
Write or wire for FREE LITERATURE and name of your TARGET DEALER.

By the makers of TARGET Masonry Saws and TARGET "Color Coded" Diamond Blades — Abrasive Blades — Reinforced SAFETY Blades.

Stocked and serviced by TARGET Dealers throughout the world.

Robert G. Evans Co. 7200 Wyandotte Kansas City 14, Missouri

(EXCLUSIVE DEALERSHIPS AVAILABLE IN SOME TERRITORIES)



The Scoopmobile LD5T front-end loader.

Loader features complete operator visibility

■ A new 1-cubic-yard front-end loader that is said to transport a full load with the bucket raised off the ground just enough to clear the terrain is announced by Mixermobile Manufacturers, Inc.

In addition to unimpaired operator visibility, the Scoopmobile LD5T features, as standard equipment, four-wheel steering and two-axle oscillation. The four-wheel steering is said to afford high maneuverability in tight spots and rough terrain, while the 2-axle oscillation permits a wheel to drop into a hole without losing tractive power.

Other standard equipment on the Scoopmobile LD5T includes torque converter, planetary drive, power steering, reversing transmission, four-wheel drive and four-wheel brakes.

For further information write to Mixermobile Manufacturers, Inc., 8627 N. E. Killingsworth St., Portland 20, Oreg., or use the Request Card at page 18. Circle No. 175.

New Flintkote plant

A new gypsum-processing plant will be erected at Sweetwater, Texas, by the Flintkote Co., New York, N. Y. The plant will be used for the manufacture of gypsum board, plaster, and other similar materials.

with Monotube Foundation Piles...

CONTRACTOR SAVED 19 DAYS

PILE DATA

Type—Monotube
Diameter—12 inch
Gage—7
Number of piles—1438
Length—up to 90 feet

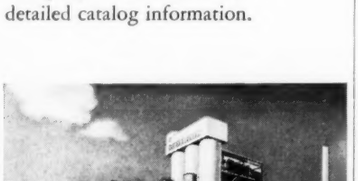
Constructed for:
United Illuminating Co., Bridgeport, Conn.

Engineers:
Jackson & Moreland, Inc., Boston, Mass.

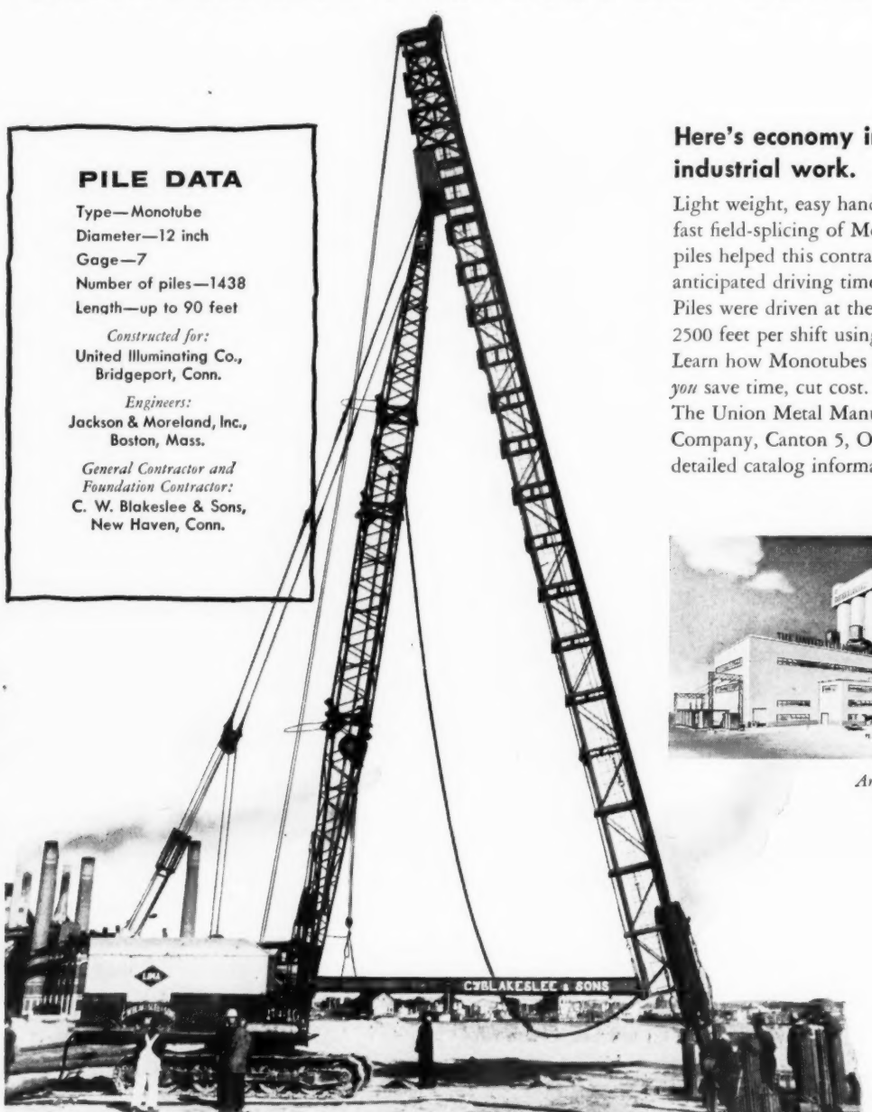
General Contractor and Foundation Contractor:
C. W. Blakeslee & Sons, New Haven, Conn.

Here's economy in industrial work.

Light weight, easy handling and fast field-splicing of Monotube piles helped this contractor reduce anticipated driving time by 19 days. Piles were driven at the rate of 2500 feet per shift using two rigs. Learn how Monotubes can help *you* save time, cut cost. Write The Union Metal Manufacturing Company, Canton 5, Ohio, for detailed catalog information.



Architect's rendering of Bridgeport Harbor generating station, Bridgeport, Conn.



One of the two standard rigs, shown here driving batter piles. Any specified batter is easily met with Monotubes.

50 FIFTIETH ANNIVERSARY 1906-1956

UNION METAL
Monotube Foundation Piles

For more facts, use Reader-Reply Card opposite page 18 and circle No. 235

Convention calendar

August 10–12 Seabee Veterans of America
Meeting, Hotel Sinton, Cincinnati, Ohio. J. Bert Knille, past national president, SVA, 1214 Sliker Ave., Cincinnati, Ohio.

August 20–24 National Shade Tree Conference
Meeting, Royal York Hotel, Toronto, Canada. L. C. Chadwick, secretary-treasurer, NSTC, Department of Horticulture, Ohio State University, Columbus, Ohio.

September 5–7 Virginia Highway Conference
Conference, Hotel Roanoke, Roanoke, Va. R. P. Ellison, executive assistant, VHC, 1221 E. Broad St., Richmond, Va.

September 16–22 American Society for Testing Materials
Second Pacific Area National Meeting and Apparatus Exhibit, Hotel Statler, Los Angeles, Calif. Fred F. Van Atta, assistant secretary, ASTM, 1916 Race St., Philadelphia, Pa.

September 23–26 American Public Works Association
Meeting, Will Rogers Memorial Auditorium, Coliseum, and Exhibit Building, Fort Worth, Texas. Donald F. Herrick, executive Director, APWA, 1313 E. 60th St., Chicago 37, Ill.

September 30–October 2 American Congress on Surveying and Mapping and the American Society of Photogrammetry
Meeting, Shirley-Savoy Hotel, Denver, Colo. ACSM—ASP, Box 1407, Edgewater Branch, Denver, Colo.

October 2–5 Short Course on Roadside Development
Fifteenth Annual Short Course of Instruction, Deshler-Hilton Hotel, Columbus, Ohio. Wilbur J. Garmhausen, chief landscape architect, Department of Highways, Columbus 15, Ohio.

October 15–17 American Bridge, Tunnel & Turnpike Association
Meeting, Broadview Hotel, Wichita, Kans. Secretary, ABTTA, P. O. Box 748, White Plains, N. Y.

October 15–19 American Society of Civil Engineers
Pittsburgh Annual Convention, William Penn Hotel, Pittsburgh, Pa. Don P. Reynolds, assistant to the secretary, ASCE, 33 W. 39th St., New York, N. Y.

October 22–24 National Lubricating Grease Institute
Meeting, Edgewater Beach Hotel, Chicago, Ill. T. W. Miller, executive secretary, NLGI, 4638 J. C. Nichols Parkway, Suite 221, Kansas City 12, Mo.

October 22–26 National Safety Congress and Exposition
Forty-fourth Annual Convention, Conrad Hilton Hotel, Chicago, Ill. R. L. Forney, secretary, NSC, 425 N. Michigan Ave., Chicago 11, Ill.

October 24–25 American Concrete Institute
Meeting, Mont Royal Hotel, Montreal, Quebec, Canada. William A. Maples, secretary-treasurer, ACI, 18263 W. Mc-Nichols Road, Detroit 19, Mich.

October 24–25 National Slag Association
Meeting, Sheraton-Park Hotel, Washington, D. C. E. W. Bauman, managing director, NSA, 613 Perpetual Bldg., Washington 4, D. C.

October 25–26 National Society of Professional Engineers
Fall Meeting, The Greenbrier Hotel, White Sulphur Springs, W. Va. NSPE, 2029 K St. N. W., Washington 6, D. C.

October 29–November 1 American Institute of Steel Construction
Meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. L. A. Post, executive vice president, AISC, 101 Park Ave., New York 17, N. Y.

January 28–February 2, 1957 American Road Builders' Association
Combined Conference, Road Show, Chicago, Ill. ARBA, World Center Bldg., Washington 6, D. C.

Clipper Mfg. Co. has added a wet-cutting series to its line of triple-reinforced, break resistant cutting blades.

Add wet-cutting blade to break-resistant line

■ A wet-cutting, triple-reinforced abrasive blade, made especially for wet cutting on the entire range of masonry materials from hard to soft, is announced by the Clipper Mfg. Co.

Similar to its dry-cutting counterpart the Polk-A-Dot Series CRB-900 break-resistant blade, the new wet-cutting Series CRB-500 is completely reinforced throughout with strong Fiberglas webbing, while the center of the blade has extra reinforcing.

The new blades are available in 14-inch diameters in a complete range of models for cutting any masonry materials.

For further information write to the Clipper Mfg. Co., 2800 Warwick, Suite 635, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 153.

Lightweight rock drill weighs only 66 pounds

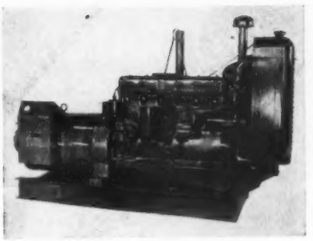
■ A new portable, lightweight, high-capacity rock drill and breaker, the Pionjar BRH-50, is available from the Stanco Mfgs. & Sales Co. The gasoline-powered drill weighs 66 pounds when fully-equipped for operation.

The BRH-50's drilling capacity in medium-hard granite is 46 feet per hour with a 1.06-inch bit, and 29.5 feet per hour with a 1.34-inch bit. Drilling depths range up to 20 feet in granite. The jackhammer creates its own air blast, removing the cuttings as the machine drills.

The Pionjar BRH-50 is offered complete with a drill chuck, a conversion unit for breaking, a moil point, all necessary tools for complete maintenance, and some replacement parts, such as a spark plug, nuts, and bolts. The power unit in the drill-breaker is a two-stroke, one-cylinder, gasoline-operated engine. The piston works in an inverted position, firing directly against a hammer which is forced downward against the steel to create the working action. A floatless-type carburetor allows the jackhammer to work vertically or horizontally.

For further information write to the Stanco Mfgs. & Sales Co., 1931 Pontius St., Los Angeles 25, Calif., or use the Request Card at page 18. Circle No. 3.

The new Universal 720 Series generating sets feature electric, remote, or automatic starting.



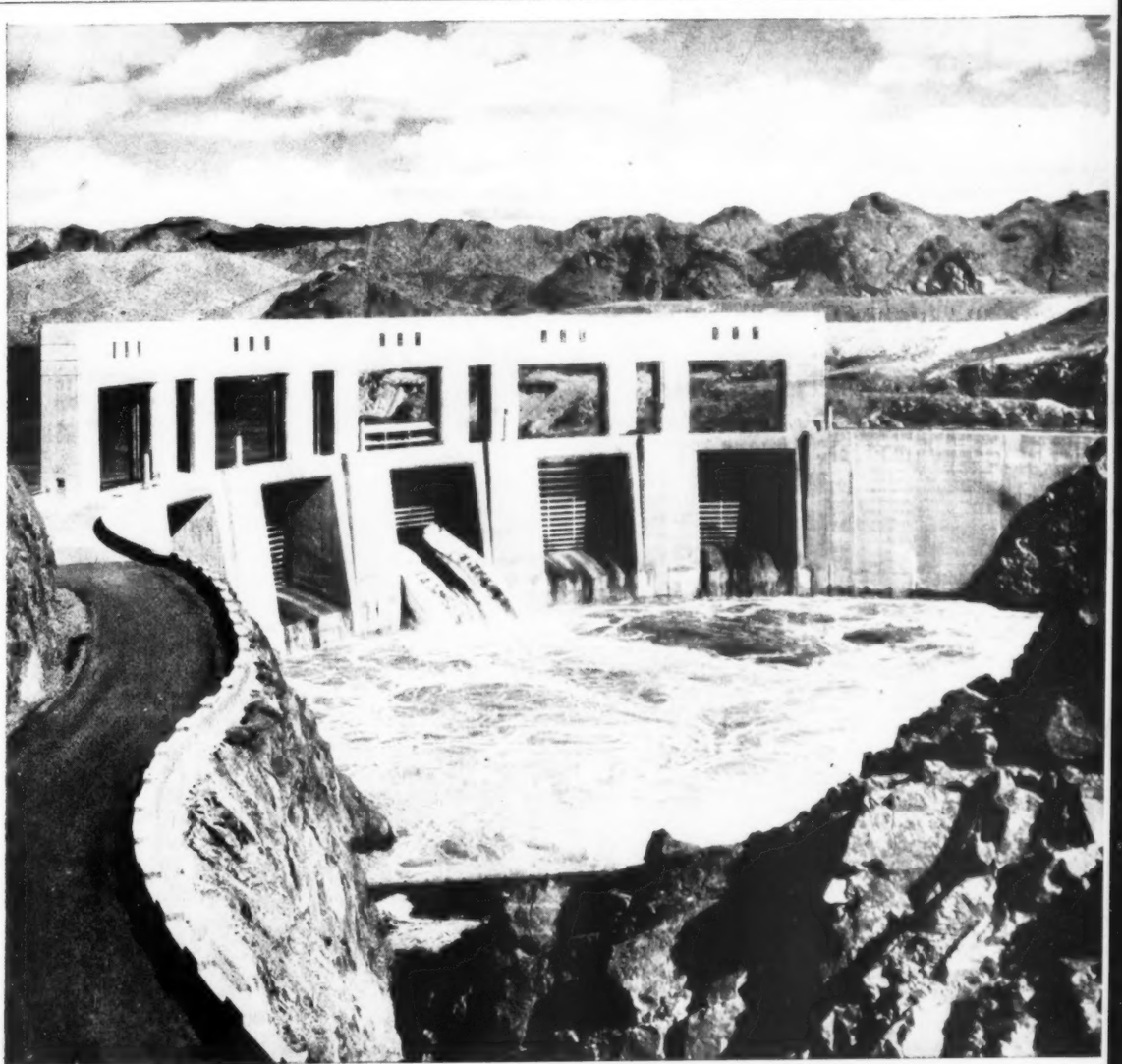
New line of generators with 35,000-watt capacity

■ A new line of gasoline-engine-driven generating sets of 35,000-watt capacity has been announced by the Universal Motor Co. The new line is powered by 6-cylinder, 4-cycle, water-cooled engines of 300-cubic-inch size that develop 72 horsepower at 1,800 rpm.

The generators are the 4-pole, revolving field type with direct-connected exciters. Bearings are of the double-shielded ball-bearing type with sealed-in lubricant. Standard equipment includes control cabinet with ac instruments, automatic voltage regulator and rheostat, voltmeter, and voltmeter selector switch.

Standard 720 series plants are 60-cycle—either 240-volt 3-phase, 3-wire or 120 to 280-volt, 3 phase, 4-wire—and are also available in 50-cycle-frequency models. All models are 6-volt electric starting. Choice of controls include electric starting, remote starting, automatic starting, or emergency automatic standby.

For further information write to the Universal Motor Co., 428 Universal Drive, Oshkosh, Wis., or use the Request Card at page 18. Circle No. 23.



IMPOSSIBLE WITHOUT EXPLOSIVES

PARKER DAM on the 242-mile-long Colorado River—Los Angeles Aqueduct is another example of the many large construction jobs that Hercules® explosives and blasting supplies have helped to build.

Parker Dam and other such mammoth projects would be ***impossible without explosives.***

Whether your blasting requirements are routine or unusual . . . whether they involve construction, mining, quarrying, or other industrial applications . . . you can depend on Hercules' knowledge and experience in the manufacture of blasting materials, and their uses, to make your job easier.

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INCORPORATED
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LIGHTWEIGHT ONE-MAN OPERATION!

Smallest Vibrator Head Made!
1¼ inches in Diameter
with high frequency and high kick
ABLE TO HANDLE STIFF MIX-LOW SLUMP CONCRETE!
Will do 90% of the contractor's work better and — at lower cost!
900 J-5 WYCO Vibrator overall length 6' — Vibrator 1¼" diameter — Total weight 20 lbs.
Flexible shaft extension up to 15' long

$135.00 f.o.b. Chicago

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WYZENBEEK & STAFF, INC.
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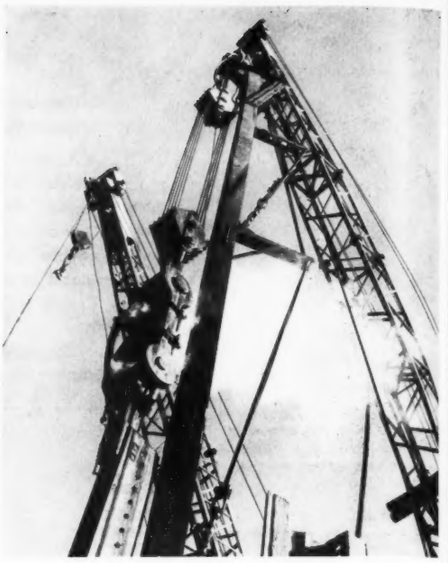


The McKiernan-Terry pile extractor is hung from a steel strong-back suspension that exerts downward pressure on the pile next to the one being removed. Cable strongbacks and a cable from the cross-bar to a deadman give the unit additional strength.

(Additional photos on facing page)

Office and foundation problems complicate interstate bridge work

Arizona and California laws cover work on Colorado River bridge; driving piles, and removal of sheeting form biggest job

Finishing touches on the $1,236,765 Yuma Bridge spanning the Colorado River between California and Arizona brought work to a close last month on a complicated interstate project involving both construction and management problems for the contractor.

In addition to meeting and solving foundation and unwatering problems, the contractor had to cope with the various laws of both Arizona and California on wage rates, workmen's compensation, insurance, taxes, and safety regulations. There was no compromise possible; the only solution was to have Arizona provisions in force on the south half of the span and California's regulations applying north of the center line. Working under two sets of regulations, the contractor had to complete a difficult pile-driving assignment, erect falsework, and handle 9-foot-deep girders.

Because the work had to be done in compliance with the laws of two states, the Associated General Contractors held a pre-contract conference to explain the situation to

(Continued on page 56)

Are You Ready to Get Your Share of the $325,000,000* Swimming Pool Construction Market?

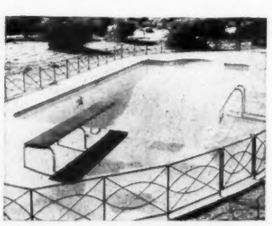
*Survey by Swimming Pool Age

AIRPLACO® **Concrete Gunning Equipment Makes Pool Construction**

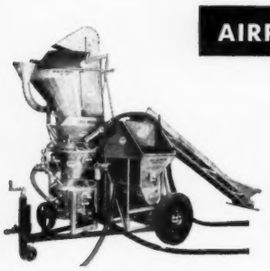
FASTER • EASIER • MORE PROFITABLE

As the swimming pool becomes an increasingly familiar part of America's way of living, it opens up a tremendous new profit opportunity for you.

This opportunity can be even more profitable if you use AIRPLACO concrete gunning equipment for your pool construction jobs. You get the job done faster, easier, better and at a greater profit to you.



AIRPLACO PORTABLE RIG



The AIRPLACO rig consists of a job-proved BONDACTOR® or NUCRETOR,® the automatic proportioning, continuous mixing, elevating and screening MIX-ELVATOR, and the time-saving SAND-LOADER. Makes any concrete job easier, more profitable.

AIRPLACO concrete gunning equipment is available in a wide range of sizes to meet your production and job requirements from ½ to 7 cubic yards of aggregate per hour, and using air compressors with 75 to 600 CFM capacity.

FREE CATALOG

WRITE TODAY FOR FREE CATALOG . . . that will explain all the many benefits and specifications of AIRPLACO concrete gunning equipment or see your AIRPLACO distributor.

AIRPLACO® **AIR PLACEMENT EQUIPMENT CO.**
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MANUFACTURERS OF ADVANCED DESIGN CONCRETE GUNNING, MIXING AND PUMPING EQUIPMENT

For more facts, use Reader-Reply Card opposite page 18 and circle No. 238

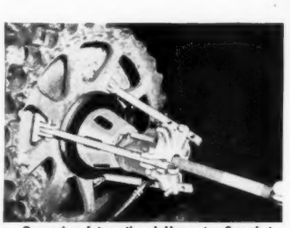
CRAWLER TRACTOR **SPROCKETS - MASTER PINS REMOVED in MINUTES in the field**

Removing Track Master Pin with OTC Hydraulic Ram and Adaptors.

with **ONE** OTC **HYDRAULIC PULLER**

Hydraulic Ram and Puller makes both jobs easier.

One man can remove a Crawler Track Master Pin or a Sprocket or both in mere minutes with the OTC Hydraulic Puller and Attachments. Available in 50 ton or 100 ton capacities these versatile sets are easily and quickly put to work in the shop or field. Hand or electric pumps are available . . .



Removing International Harvester Sprocket with OTC Hydraulic Ram and Adaptors.

The OTC POWER-TWIN HYDRAULIC UNITS are also easily adapted to pull, bend, straighten, press or spread—pull or install bearings, sheaves, gears or pulleys on all types of contractor equipment. Quickly pay for themselves in man hours saved. For the complete story on the OTC Hydraulic line write for Bulletin HY-55.

OWATONNA TOOL COMPANY
381 CEDAR STREET • OWATONNA, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 239

As temporary falsework for girders is set by the stiff-leg derrick, cofferdam sheeting is removed by the crane at right. A 10-part block hook-up on a McKiernan-Terry E-4 pile extractor was used for this work.

(Article on facing page)

An American Bridge stiffleg derrick drives piles for the temporary falsework that will support the 9-foot-deep girders. The McKiernan-Terry 10-B-3 pile hammer is supplied with steam by a Cleaver-Brooks steam generator.

SAND GRAVEL STONE DRY

HOURLY OUTPUT
Sand 6-7 tons
Stone, Gravel 10-15 tons

Mobile, fast and economical, the TARCO "Flash-Flame" AGGREGATE and MATERIAL DRYER will keep your crew busy! Also dries Slag, Peat, Soil, Metal Shot, Vermiculite, Ores, Sewer Bed Sludge, etc. See your dealer or write for details.

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TARRANT MFG. CO.
31 JUMEL PL., SARATOGA SPRINGS, N. Y.

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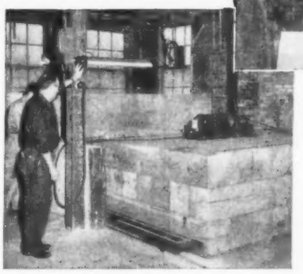
Clutches Are Spin Strength Tested to Meet The Needs of Modern High Speed Engines

First they are put in a deep, armor-plated, concrete test pit.

Then fastened on a shaft that spins the clutch at high speed.

The clutch is spun, and highest R.P.M. recorded.



Let us help insure fully-tested clutches for YOUR products.

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Clutch Division
BORG-WARNER
314 Catherine St., Rockford, Ill.

CLUTCHES

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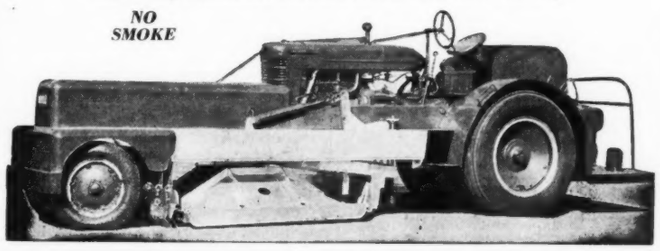
HEATS, SOFTENS
but does NOT Burn the Asphalt
Reducing Flame for Intense Heat, Efficient Planing

NO SMOKE



THE MONATCO ASPHALT HEATER-PLANER

- Separate engine powers fuel and air pumps—delivers only enough primary air to burn fuel completely. Will not ignite gases rising from pavement.
- Strict control over secondary air in the hood setting—maintains the reducing flame.

Intense, uniform heat (2000° F.) under the hood. *In one operation, with one operator* this machine heats, *softens* and planes up to 1" deep, 78" wide. Fills and seals cracks. Leaves pavement raw, clean, the same as newly laid. Unbelievably low cost of operation, reported in some cases as less than 10 cents per yard!

U. S. Patent No. 2,705,906. Ask for complete specifications and cost operating data.

MONATCO MFG. CORPORATION, 1401 Woodland, Kansas City, Mo.
A few excellent distributorships still available. Write.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 240

(Continued from page 54)

interested bidders. But for Fred J. Early, Jr., Co., Yuma, Ariz., the successful bidder on the job, the application of two sets of laws has worked out so well that there have been no jurisdictional disputes or labor unrest on the job.

Though there was no way to secure uniformity in the laws, both Arizona and California cooperated in every other possible way to build the span, and both shared the costs. By mutual agreement, California designed the bridge, let the contract, and supervised construction. The $386,886 approach on the California side ties in with U. S. 80 at Winterhaven in a long, sweeping, superelevated curve. Arizona's $302,675 approach, bypassing downtown Yuma, makes a straight line from the abutment to Fourth Avenue in Yuma.

Steel girder design

The reinforced-concrete deck of the span is supported on 9-foot deep longitudinal steel girders that in turn rest on reinforced concrete piers carried by H-beam steel pile foundations. The four-lane deck, which has a 6-foot dividing median and 5-foot sidewalk, is 9½ inches thick in the center of each 20-foot span and tapers to 1 foot 4 inches over each girder. Of the five spans, two are 155 feet long, two are 170 feet long, and one is 180 feet long.

Abutments and piers are of reinforced concrete. The pier shafts, 76 feet wide and stepping up from 4 feet 6 inches at the base to 3 feet 2 inches at the top, rest on U. S. Steel's 10BP57 H-piles. Each of the two center piers rests on 96 such units; piers further inshore have 76 foundation piles. The average length of foundation piles is 80 feet, but some—particularly those on the west abutment—are 136 feet long.

Unwatering

These deep foundations and a quicksand soil condition made for an unwatering problem that Early solved by driving sheet pile cofferdams deep around each of the piers. No cofferdams were used around abutments on dry land.

The first pier on the California side is located just at the shoreline and its construction involved a special problem. If a cofferdam were driven here, there would be a land-fill surcharge on one side and open water on the other. Early's task was to build the pier without letting the heavy sand load and the weight of cranes and a pile hammer distort the cofferdam cell or make it collapse. He did the job this way:

First a safety row of wood piles was driven 3 feet back from the outer line of the sheet piles. Material was then excavated for 10 feet behind this row of piles. Longitudinal timbers were fastened to the back of the piles, back of which were placed 6-inch timbers on end to form a 10-foot bulkhead.

Additional piles, driven in a row 40 feet back from this bulkhead, served as deadmen when the two rows were tied together with double ⅞-inch cable. The space between both rows was then backfilled to original ground level to form a work area that was close to the cofferdam and capable of relieving the ground pressure caused by the movement of heavy equipment and the vibration caused by pile-driving operations.

A self-supporting Bailey Bridge deck, supported at one end on the top of the sheet pile wall and running back onto solid ground, was used when the cofferdam excavation had been completed and foundation piles were being driven.

Pile driving

Sections of the MZ32 sheeting were set by a Koehring Model 605 25-ton machine, and pile driving was done by two cranes. The McKiernan-Terry 10-B-3 double-acting pile hammer was supplied with steam by a Clayton automatic steam generator. Each 91-foot 3½-inch × 19-foot 8-inch cofferdam was driven around a rigid template for proper alignment. On center piers, the cranes worked from the top of a wood pile and timber trestle which was temporarily built out to each location.

As soon as a cofferdam had been constructed, one of the cranes excavated river sand to a point below scour line with an Owen clamshell bucket, dropping the sand into the river off the side of the cell. Steel H-beams for each foundation were then driven into a stratum of sandstone. As soon as this had been done, a diver with an underwater oxygen-arc torch cut the piles to required elevation.

Top elevations of the piles were planned so that all but the outer rows of H-beams stuck 6 feet up into the concrete tremie seal. H-beams in the outer rows go up through the tremie seal and 6 inches into the concrete of the pier.

When the thick tremie seal had been placed and had set, the cofferdam was unwatered by Rex and Jaeger pumps and forms and reinforcing for the 5-foot-thick footing block, measuring 19 × 86 feet, were placed. As soon as this pour had been completed, pier shaft concrete was placed in three lifts.

Removal of sheeting

One of the unusual phases of work

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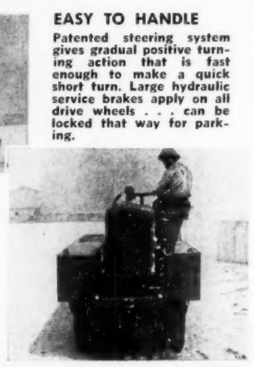
4 SPEEDS FORWARD — SELF PROPELLED — 4 SPEEDS REVERSE
PNEUMATIC TIRED ROLLER

FULL HYDRAULIC STEERING
As easily controlled as an auto with hydraulic power steering that holds the wheels in position whether stopped or in motion.

EASY TO HANDLE
Patented steering system gives gradual positive turning action that is fast enough to make a quick short turn. Large hydraulic service brakes apply on all drive wheels . . . can be locked that way for parking.

INDEPENDENT OSCILLATION ON ALL WHEELS
All wheels act independently in this exclusive design. It's impossible to overload any one tire . . . more uniform compaction is attained more quickly than with any other roller.



THE MOST MODERN ROLLER "ON THE JOB" TODAY.

- Big diesel or gasoline engine
- Torque Converter
- Hydraulic reversing unit
- Hydraulic steering unit
- Hydraulic brakes
- 4 speeds forward—4 reverse
- Flat wide tread tires overlap to eliminate ridging
- All wheels oscillate
- Equal ground pressure under all tires
- Unobstructed ballast body
- Built in water tanks for ballast and tire sprinkler system
- Perfect operator vision both forward and reverse
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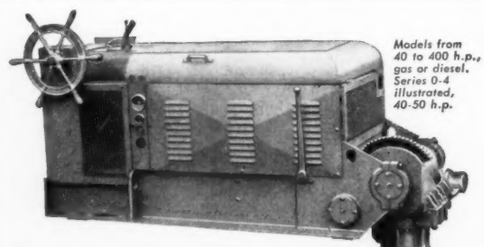


Models from 40 to 400 h.p., gas or diesel. Series 0-4 illustrated, 40-50 h.p.

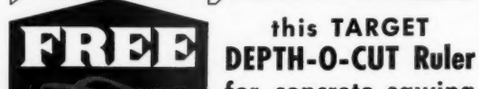
Harbormaster . . .
work horse of the waterways

If you need easily installed power, better steering control, safety in shallow water, easier maintenance, more efficient performance, simpler hull design, more cargo space, bigger payloads, or simplified crew operation . . . you should investigate the benefits of Harbormaster Outboard Propulsion and Steering. Harbormaster is a complete power and steering package. It is powerful and highly maneuverable and has wide application in shallow or deep water, for coastwise service as well as in harbors, lakes, canals, and rivers.

Send for catalog giving complete information and showing Harbormasters in action . . . or if you have a problem our marine architect will make recommendations without obligation.

MURRAY & TREGURTHA, Inc.
44 Hancock St., Quincy 71, Massachusetts

For more facts, circle No. 244



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- ★ Sturdy aluminum construction, high-visibility black enamel ruling.
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WE'LL MAIL IT TO YOU FREE—JUST TO ACQUAINT YOU WITH OUR HYDRAULICALLY OPERATED "360" CONCRETE SAW, THRIFTY SAW, AND TARGET BLADES!

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Address _____
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We'll include an *extra* FREE GIFT (completely different) if you'll take a minute to tell us about your present concrete cutting job.

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For more facts, use coupon or circle No. 245

has been the removal of the MZ32 sections from the cofferdams. Early used a 10-part block hookup on a McKiernan-Terry E-4 pile extractor for this job. This was hung from a steel strongback suspension which put restraining pressure on the pile located next to the one that was being extracted.

The strongback was made from a 40-foot boxed section of 10-inch BP 57-pound piling in the shape of a T. Plates were welded over the ends of the H-piles before welding on the top crossbar piece. A box-truss effect was achieved by strengthening the section with cable strongbacks rigged to combat the haul-down forces when extracting pressure was applied. With its bottom resting on the pile section next to the one being pulled, and one end of its T tied back to a deadman or adjoining sheet piles, the piece was suspended by the hoist line from a crane. The E-4 extractor, hung from the other end of the T by a 10-part block, did the actual pulling after tension had been applied by the load line from the crane.

Superstructure work

The steel girders supporting the deck were erected under a subcontract by American Bridge Co., which used a traveling stiffleg derrick to raise the steel. As soon as each bent was finished, the rig moved forward to the next position. Temporary support for the ends of the girders was provided by a timber falsework, consisting of wood piles. These were driven by a McKiernan-Terry 10-B-3 pile hammer supplied with steam by a Cleaver-Brooks automatic steam generator mounted on skids. The piles were capped and cribbed to support the girders.

Concrete placement for the deck was conventional, buggies handling concrete supplied in Challenge truck mixers by Yuma Builders Supply Co. But the method of forming was unconventional. Instead of supporting the formwork from the bottom web of each girder, the contractor hung the forms from the top flange with Superior steel coil hangers used at 32-inch centers.

The coil hangers held longitudinal sets of double ledgers with 2×14-inch timber joists at 13¾-inch centers, that span the 20-foot distance between girders. Form facing was nailed to these joists. About 240 feet of this type of deck forming was prefabricated to permit concrete work to move fast. Timber brackets, attached to the girder, supported the outer edges of the cantilevered deck that overhang the girders.

Personnel

Field operations were under general superintendent Ace Miller, with A. K. Gilbert as resident engineer. George T. McCoy, state highway engineer, and F. W. Panhorst, assistant state highway engineer, had general supervision for California. The Arizona State Highway Department is headed by William E. Willey, state highway engineer, and C. B. Browning is deputy state highway engineer.

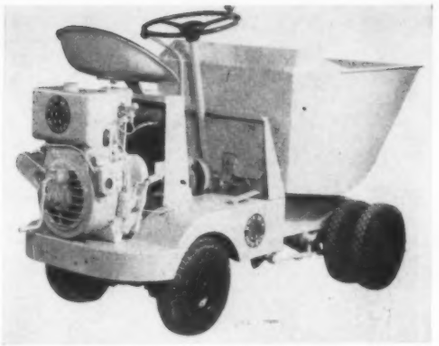
THE END

Automatic transmission improves power cart

■ The introduction of an automatic power-flow transmission as standard equipment on the Model R-15 Moto-Bug is said to provide an increase in speed, power, operating ease, and production capacity, according to the Kwik-Mix Co., a subsidiary of the Koehring Co.

The new automatic transmission corrects power-flow output automatically in direct ratio to power requirements without the necessity of shifting gears or using a clutch pedal. A single lever regulates either forward or reverse travel.

Speed on the Moto-Bug with automatic transmission has been increased to 12 mph. The power ratio of 4 to 1 multiplies engine torque range as much as 200 per cent. In addition, with a full load of 2,000 pounds, the Moto-Bug will negotiate grades up to 25 per cent, a better than 50 per cent increase over previous ratings.



The Kwik-Mix Moto-Bug, Model R-15, now has automatic power-flow transmission.

For further information write to the Kwik-Mix Co., 235 W. Grand Ave., Port Washington, Wis., or use the Request Card at page 18. Circle No. 21.

It's easy to dig more ditch with a

Gar Wood Buckeye

407

Put yourself in the seat and see the difference...

SPEEDS YOU CAN FIND and use! One selector lever plus high-low range lever makes changing speeds easy. No complicated diagrams to figure out!

PUSH-BUTTON CONVEYOR SHIFT speeds work around obstructions. Just push the button to shift conveyor electrically while digging! No need to stop machine.

INSTANT BOOM CONTROL, with live hydraulic action, makes it easy to maintain grade, clear underground obstructions. One convenient lever does it!

Fast, accurate adjustment for changing conditions saves time, boosts production

Gar Wood-Buckeye's 407 ditcher is far easier to operate, control and adjust than any other ladder-type ditcher in its class. Here's why:

Streamlined and compact, the 407 has the smallest practical dimensions for the widest range of applications. Lowest overall height, 7 feet 3½ inches, for easy transport without disassembly. It's exceptionally easy to maneuver in close quarters . . . digs neat, clean ditch right up to walls and foundations. Also digs in reverse for tunneling and undercutting. The boom on the 407 is raised, lowered and held by an independent, live hydraulic system. You get fast positioning with positive down-pressure.

All these advantages and more have made Gar Wood-Buckeye's 407 the world's largest selling ladder-type ditcher. See your Gar Wood-Buckeye dealer, or write to: Customer Service Dept., Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

Wayne, Michigan • Findlay, Ohio

Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

Gar Wood Excavators | Gar Wood Tractor Equipment | Gar Wood Winches | Gar Wood-Buckeye Finegraders | Gar Wood-Buckeye Ditchers | Gar Wood-St. Paul Hoists & Bodies

For more facts, use Reader-Reply Card opposite page 18 and circle No. 246

The Little Giant Model SPA ½-yard crane features a low center of gravity and a less than 60-foot turning circle.

Self-propelled crane works in tight spots

■ A ½-yard self-propelled yard crane, equipped with hydraulic Servo steering and hydraulic power brakes, is available from Little Giant Crane & Shovel, Inc.

A lower center of gravity, less tipping action, a greater safety factor, greater stability, lower maintenance costs, minimum downtime, and easier swinging are among the Model SPA's advantages, according to the manufacturer.

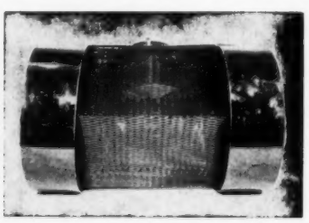
The unit will turn in less than a 60-foot circle, and is recommended for crane or shovel work in cramped quarters. The entire unit, including counterweight and attachments, meets existing highway-load limits.

For further information write to the Little Giant Crane & Shovel, Inc., E. 16th & Howard Drive, Des Moines 13, Iowa, or use the Request Card at page 18. Circle No. 114.

Strainer protects dewatering pumps

■ A new strainer for use with construction pumps and other dewatering equipment is available from Stolper Steel Products Corp. The strainer, made of all-welded steel and finished in rust-proof baked enamel, is manufactured in sizes to fit suction lines of from 1½ to 6 inches in diameter.

Though the screen is small enough to guard against impeller damage, the



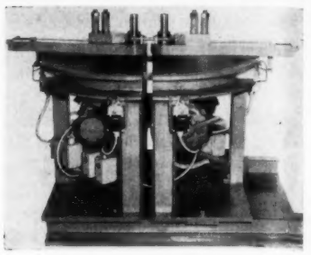
total open area is greater than that of the suction line. Therefore, the water flow is not restricted. Round perforations in the screen facilitate cleaning and keep clogging to a minimum, the manufacturer points out.

The flat, closed base prevents the unit from sinking in soft bottoms, according to the company. The inside baffle maintains suction even when the strainer is only half submerged.

For further information write to Stolper Steel Products Corp., Menomonee Falls, Wis., or use the Request Card at page 18. Circle No. 60.

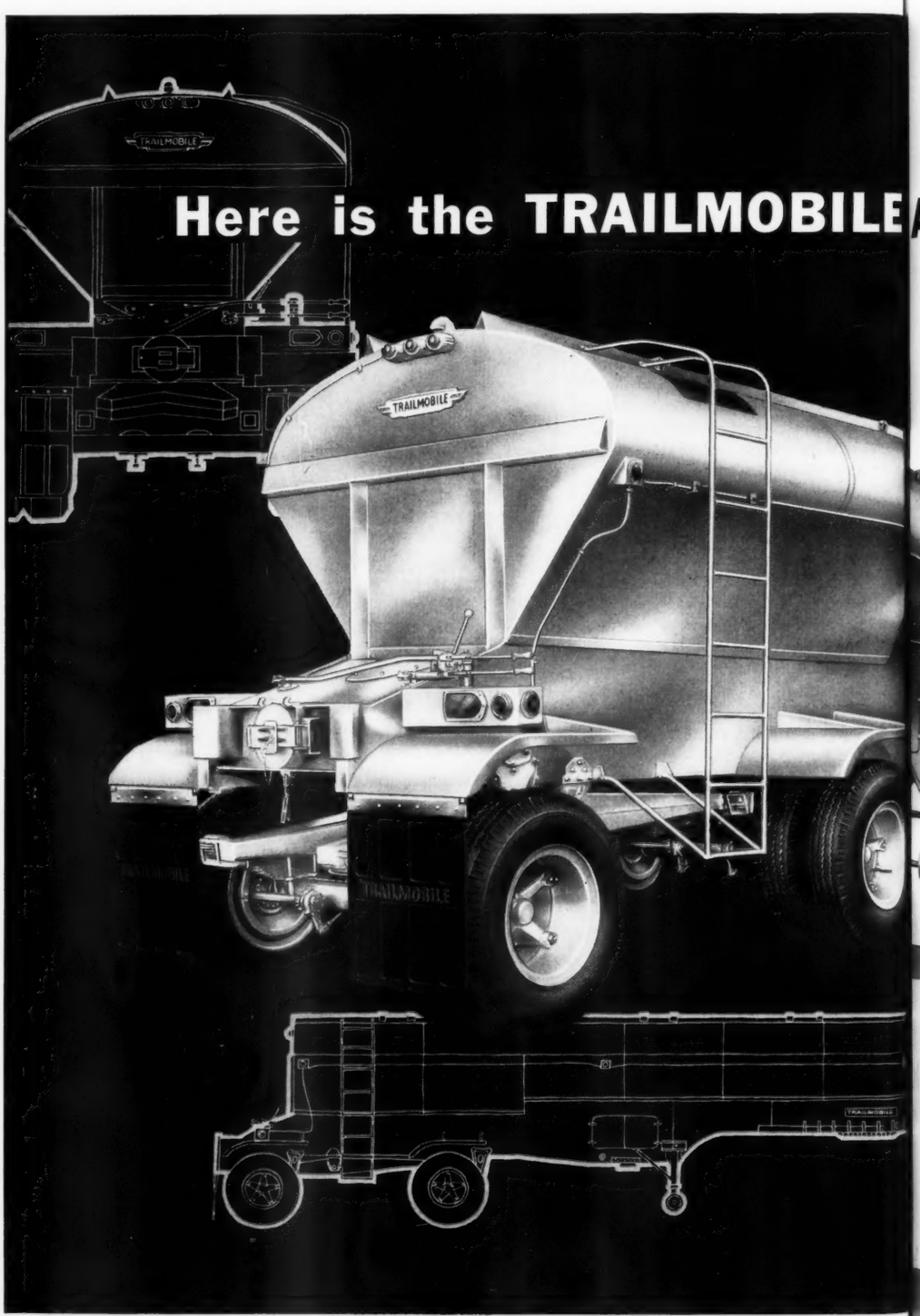
Machine bends pipe, steel simultaneously at both ends

■ A new bending machine which bends both ends of a pipe, tube strip, or other shapes simultaneously is announced by the Pedrick Tool & Machine Co. The machine is recommended for use in bending reinforcing steel.



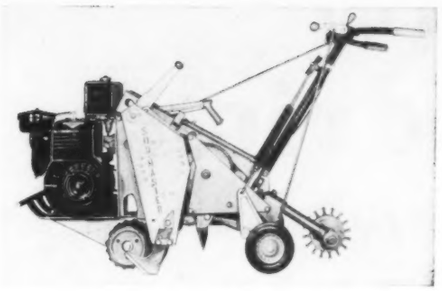
The new bender actually comprises two machines, each with a motor and relay control, mounted on a base which is adjustable as to centers. Both units are controlled from a single starting button. One unit bends clockwise and the other counterclockwise, but both units may be made to bend the same way if it is desired to bend offsets. One unit may be made to bend 90 degrees and the other 45 degrees or any curvature up to 180 degrees. The centers are adjustable either manually or by means of a lead-screw driven by a motor, and the machine may or may not be provided with an ejector.

When fully equipped, the Pedrimatic can be made completely automatic, taking stock from a hopper



and delivering it to a conveyor in finished condition without an operator. The machine may be either manually or automatically controlled.

For further information write to the Pedrick Tool & Machine Co., 3640 N. Lawrence St., Philadelphia 40, Pa., or use the Request Card at page 18. Circle No. 95.



The Sod-Master now includes a Measure-Matic Divider which is said to eliminate expensive cross cutting.

Sod-cutting machine for highway roadsides

■ A power sod-cutting machine recommended for use by highway department crews in connection with road-widening operations and other highway construction or maintenance work is offered by the Sod-Master Corp. Four models of the machine are offered for cuts of 12, 16, 18, or 24-inch width.

The one-man-operated Sod Master is powered by a Briggs & Stratton 5.2-hp engine or its equivalent; engines of greater horsepower are available at extra cost. An adjustable tempered special-alloy-steel blade cuts sod ¼ to 2½ inches thick. Standard cutting speed is 70 to 155 fpm.

A new feature of the Sod-Master is the Measure-Matic Divider, said to eliminate cross cutting and produce uniform strips of sod with square ends.

All controls are grouped at the handlebar for easy operation by the operator.

For further information write to Sod-Master Corp., 3456 N. Washington Ave., Minneapolis 12, Minn., or use the Request Card at page 18. Circle No. 133.

New electric hammer is versatile tool

■ A lightweight electric hammer for maintenance and construction work is announced by Ingersoll-Rand. The tool is recommended for a variety of operations, including star drilling, demolishing, breaking, chipping, digging, riveting, chiseling, cutting, forming, and vibrating.

Weighing only 12 pounds 13 ounces, the hammer is said to be easier to handle, while providing more power per pound, than any other electric hammer. It will drill holes in concrete up to 1⅛ inches in diameter. The tool delivers up to 1,900 blows per minute.

Operations may be performed on a variety of materials, including concrete, macadam, stone, cinder block, wood, metal, tile, and earth.

Known as the H54U electric power hammer, the new tool's consistently solid, hard-hitting blows reportedly are due to an exclusive "spring-floated" piston; the sealed spring accelerates the piston to produce a more powerful blow. This design is said to prevent leakage and loss of power which sometimes occurs with an air-cushioned piston.

The tool is available in a standard kit, with a choice of three packaged accessory kits, or individual accessory items may be purchased as desired. The standard H54U kit includes the H54U hammer with 15-inch cable and grounding adapter, together with a metal carrying case, can of oil, tool retainer, dust shield, drill adapter (with handle and handle sleeve), drift and ⅝-inch-diameter steel star drill.

Accessory packages contain selections of carbide drills, moil points, demolition tools, chisels, and other tools. Other drills, points, and breaking or cutting tools are available separately.

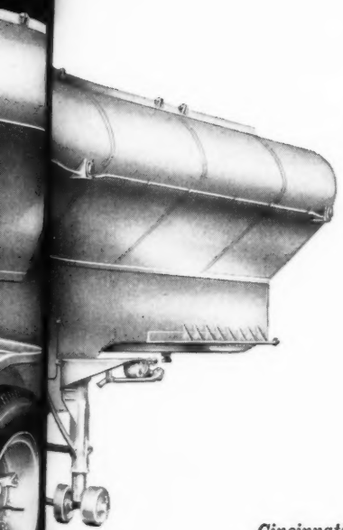
For further information write to Ingersoll-Rand, 11 Broadway, New York, N. Y., or use the Request Card at page 18. Circle No. 97.

Universal Atlas promotes

Gilbert N. Peterson last month was made assistant plant manager of the Buffington, Ind., plant of Universal Atlas Cement Co., New York, N. Y. Previously, he was plant engineer at the Universal, Pa., plant. Peterson started with the firm in 1950 as mill practice engineer.

ALUMINUM cement bulker

a strong, streamlined, service-proved design



The newest thing about the Trailmobile aluminum cement bulker is the aluminum itself—for we have constructed in aluminum the same strength and ruggedness, the same safety and ease of operation that have made Trailmobile's steel bulkers high-profit performers for years.

In the aluminum bulker a weight saving of approximately 3,000 lbs.* gives you as much as 7% more payload capacity—enough added revenue in many operations to repay the cost of the trailer itself in a matter of months. We've also streamlined the unit by providing a smooth skin side without ribbing of any kind. And we've proved the over-all design under actual operating conditions during the past two years.

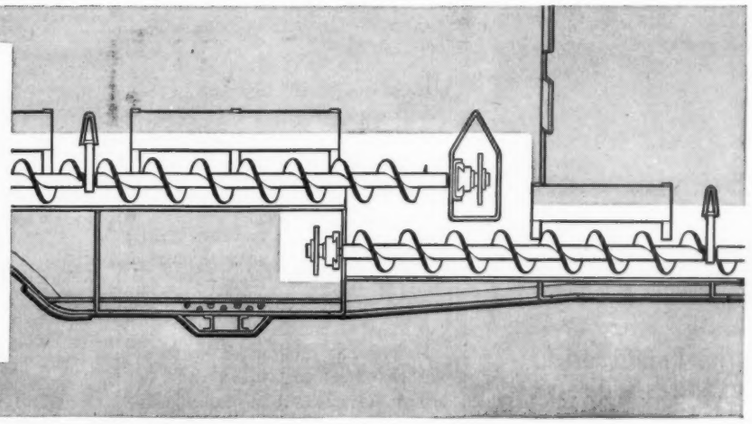
The Trailmobile aluminum bulker is a part of a complete line of bulk commodity trailers that meet every need. Call or write your nearest Trailmobile branch office for complete information.

**on 130-barrel unit*

TR-476

TRAILMOBILE INC.

Cincinnati 9, Ohio • Springfield, Missouri • Longview, Texas • Berkeley 10, California



Trailmobile's exclusive step-down construction

Provides two single screws which operate independent of each other using ½ as much horsepower as required by full length screw designs. This allows faster, positive unloading, and reduces maintenance due to shorter screw length and a smaller power unit.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 247

Call us for B.F.Goodrich on-the-job → TIRE SERVICE

All tire sizes and types! All kinds of jobs!

No matter how big the tire, how intricate the equipment, how complicated the repair job, we can handle it *quickly, expertly*. Our B. F. Goodrich Tire Service Men are trained for the specialized task of servicing off-the-road tires on the job.

Without cost or obligation we will inspect all your tires. We'll select tires that should be repaired or replaced, point out tires that should be retreaded or recapped by factory-tested and proved B. F. Goodrich methods. We'll set up a proper inflation program.

The next time you need tires or fast, efficient tire service, call us.

Completely equipped Servicemobile

B. F. Goodrich Servicemobiles are equipped with hydraulic cranes, power wrench, tube repair vulcanizers, a 20-ton jack and all other equipment needed for tire service work on the job.

Your B. F. Goodrich Tire Service Man can quickly mount and demount tires, repair tubes and valves, etc. You save costly down-time, cut tire costs to a minimum.

B.F.Goodrich FIRST IN RUBBER

See us for B. F. Goodrich off-the-road tires and service →

For more facts, use Reader-Reply Card opposite page 18 and circle No. 248

Submersible pumps handle up to 40 per cent solids

■ Submersible pumps recommended for use at building sites, in shafts, open excavations, and dock work are distributed by Stanco Mfgs. & Sales, Inc. Manufactured in Sweden, Flygt

The Flygt Model B-80 and the smaller Model B-38L submersible pump.

pumps are available in two models, the B-38L and the B-80. According to the distributor, they can handle water containing as much as 40 per cent solids.

The B-38L weighs 70 pounds and can push from 25 gpm at a 60-foot head to 55 gpm at a 20-foot head. The larger B-80 has a 6-hp motor and a range of from 110 gpm at a 90-foot head to 275 gpm at a 20-foot head. Both models have light-pressure-type discharge hoses and require no armored suction hoses.

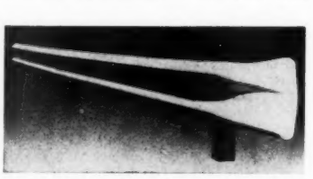
The pumps are self-priming, frostproof, and corrosion-resistant. Two mechanical seals and an oil lock between the pump and the motor prevent water from reaching the power unit.

For further information write to Stanco Mfgs. & Sales, Inc., 1931 Pontius St., Los Angeles 25, Calif., or use the Request Card at page 18. Circle No. 156.

Highway guard rail in deep-beam model

■ Syro Steel Co. has announced the availibility of Protecto-Beam, a new deep-beam standard highway guard rail.

Available in 10 and 12-gage thicknesses, Protecto-Beam meets the new standard specifications for beam-type



Syro Steel's new Protecto-Beam highway guard rail.

highway guard rail, according to the manufacturer.

Companions to Protecto-Beam are Protecto-Rail guard rails, designed for erection at parking lots, shopping centers, schools, parks, factories, buildings, and others facilities. These are available in three sizes: the high-rib 8 feet × 7 inches; the flat-rib, 8 × 8⅛ inches; and the 9-inch heavy duty rail, 8 feet × 6 inches.

For further information write to the Syro Steel Co., Girard, Ohio, or use the Request Card at page 18. Circle No. 94.

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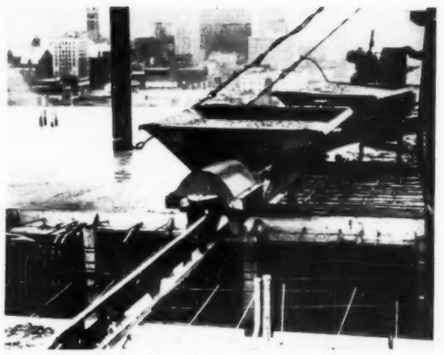

The Railporter track easily spans reinforcing steel, stair openings, and other obstacles at this multifloor construction job. It can travel at speeds in excess of 300 fpm.

A workman tips the Rex Railporter hopper in pouring a floor slab. Rail stands and the single rail were placed to fit between wire mesh and electrical conduits, eliminating all need for wooden runways.

Power cart on monorail operates on any terrain

■ A power cart for construction materials that runs on a monorail over any terrain and stops automatically at a predetermined destination has been announced by the Chain Belt Co. The manufacturer claims the unit saves time, keeps work on schedule under any ground conditions, and eliminates the need for wooden runways and ramps.

The Rex Railporter is loaded at the supply point and sent on its way by engaging the forward-neutral-reverse clutch. The unit follows the single rail, unattended, to its destination, where it stops automatically. Workers discharge the hopper, engage the clutch in the reverse position, and send the unit back to the loading point.

Automatic stops are accomplished by means of a stop-bolt set through the rail where the stop is desired. As the unit passes over it, the stop-bolt trips the Railporter clutch and actuates its brake.

The single Railporter track can be set up to span open cuts, excavations, reinforcing steel, mud, and water. It consists of rail sections (4, 6, or 12 feet long) which are supported at each joint by adjustable-length stands. Two men can set up 100 feet of track in 20 minutes over any type of ground, according to the manufacturer. Switches and curved rail are also available.

Self-propelled by a 6-hp gasoline motor at speeds of more than 300 feet per minute in either direction, the Railporter has a hopper with a capacity of 7 tons or 13 cubic feet. An unpowered trailer unit may be used to double the capacity. The hopper can be replaced by pallets or planking for the transport of brick, cinder block, and other solid materials.

For further information write to the Chain Belt Co., 4600 W. Greenfield Ave., Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 118.

Union Wire Rope Corp. opens new warehouse

A new, fully stocked warehouse has been opened by the Union Wire Rope Corp., Kansas City, Mo., at 701 Main St. S. E., Minneapolis, Minn. Under the direction of district manager L. E. Anderson, the warehouse will serve the west-North Central states.

Photo courtesy of White Motor Co.

Identical TWINS

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Two identical Rogers Trailers — two identical White trucks — plus know how of the Duke Power Co., Spartansburg, S. C., gained by long experience, made practical the handling of this 150 ton transformer with comparative ease.

Each 50 ton trailer, generally used separately in moving various and sundry heavy loads, co-operated in handling its half of the 150-ton transformer.

Easy loading, safe handling, fast unloading and great structural strength in comparison to weight are features of all Rogers trailers.

The line includes trailers of all types and sizes — each reflecting almost 50 years of specialized trailer building experience — each thoroughly tried and proven under varying and difficult conditions.

Thoroughly investigate the features and reputation of Rogers Trailers. If you do so we confidently believe you'll "Choose A Rogers." Write for the new catalog.

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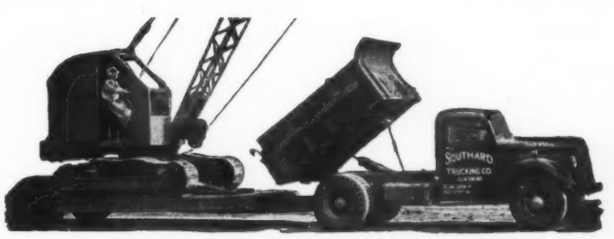
PERFORMANCE sells 'em



Truck bed being raised to connect Tagalong Trailer.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 249

Getting ready to drive, the barge-mounted stiffleg places a Vulcan No. 1 hammer on a 55-foot-long pile. The Lima crane in the background lifts the piles and places them in welded angle steel templates at the front of the derrick barge. Some rotting piling from the old railroad terminal is still standing.

Floating rigs double up for fast pile-driving job

Barge-mounted derrick drives piling for new river dock while floating crane handles and places creosoted piles

Building a water terminal facility supported by 280 creosoted timber piles averaging 55 feet in length, and completing the job in 2½ months requires coordination, proper scheduling of work, and plenty of know-how.

All of them were supplied by Seaboard Construction Co., Brunswick, Ga., on the $103,000 U-shaped dock built for the Solvay Process Division of the Allied Chemical & Dye Corp., New York, N. Y. Located on the Turtle River in the Arco section of Brunswick, the dock consists of two 121-foot-long legs that extend from shore to the 345-foot-long river dock.

Clear piling

With about two and a half months before European shipments were scheduled to be handled at the facility, the contractor had to pour speed on all the operations. And Seaboard did just that.

The first job was to remove old piling that ran parallel to the river dock and intersected the legs leading out to the dock, so that floating rigs could maneuver in the area to drive timber piles for the new facility. The rotting timber piles, part of an old railroad terminal, were cut off at the river mud-line so that they could not damage the barges as the tide went out. Many of the piles were removed after a Jaeger 5 CPH jet pump loosened the river muck, sand, and shale around them.

Crane assists hammer

As soon as this work had been finished, Seaboard started pile-driving operations for the new dock. Usually, a derrick does the entire job of lifting, placing, positioning, and driving the piles. But on this job, the piles, with 11-inch tips and 14 to 18-inch butts, were picked up and positioned in templates by a barge-mounted Lima 34 crane with a 60-foot boom. Driving was done by a barge-mounted contractor-built derrick. Though minimum bearing for pile driving was 20 tons, rock was hit at minus 48 feet in many instances.

The Lima positioned the piles in

SONOTUBES®
form full, half and quarter-round concrete columns!

Kentucky State Fairgrounds and Exposition Center, Louisville, Ky. Fred Elswick & Associates, architects and engineers. Robert Simmons Construction Co., contractors.

SONOTUBE®
FIBRE FORMS
for round columns of concrete

The contractors for the Stadium, Coliseum, Exposition Bldg. and the Livestock Bldg. at the Kentucky State Fairgrounds used the versatility of low-cost SONOTUBES to great advantage.

In this construction, many round concrete columns of varying diameters and heights were erected as well as half-round and quarter-round columns. SONOTUBES also permitted the integration of the concrete beams with the columns. SONOTUBES were selected for the formwork because they can be easily sawed on the job to required lengths as well as to the required shapes for other than full round columns. SONOTUBES are easily handled because they are lightweight and easily erected because they require minimum bracing. SONOTUBES save time, labor and money.

SONOTUBE Fibre Forms are available from 2" to 48" I.D. up to 50' long. Order in specified lengths if you desire. Use Sonoco's patented "A-Coated" SONOTUBES for finished columns, wax-coated also available. Use SONOTUBES on your next job!

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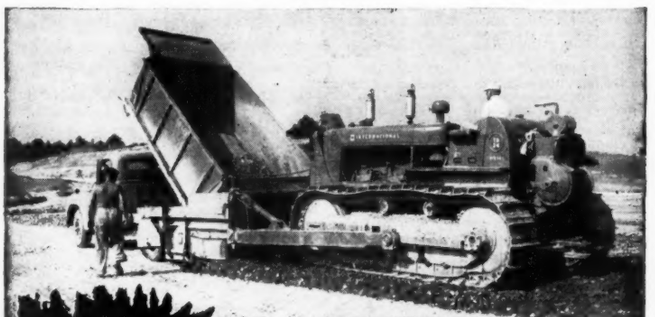
For more facts, use Reader-Reply Card opposite page 18 and circle No. 250



Owners report up to 1000 tons per hour with a Jersey Spreader!

In conjunction with the propelling tractor, a Jersey Spreader is the FASTEST, ACCURATE PAVING Spreader in the World! . . . It is capable of spreading up to 5,000 tons of aggregate daily—easily and economically . . . It has been successfully used on such projects as: the New Jersey Turnpike, the Ohio Turnpike, the West Virginia Turnpike, the New York Thruway, the Garden State Parkway, Chrysler Tank Testing Bowl, many of the most important new airports and on large defense bases in Iceland, Newfoundland, Arabia and Africa.

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MANUFACTURERS OF THE JERSEY SPREADER

TRACTOR SPREADER COMPANY
HASBROUCK HEIGHTS, NEW JERSEY

For more facts, use Reader-Reply Card opposite page 18 and circle No. 251

templates consisting of angle steel, which were welded onto the front deck of the derrick barge and properly spaced for four pile positions. In this way, four piles could be driven once the derrick barge had been positioned and anchored. With a pile set in the template, the derrick positioned a Vulcan No. 1 hammer for the actual driving job. Power for the hammer was supplied by a Littleford Kwik-Steam generator located on the derrick barge.

While the derrick was used to drive the piling for the 345-foot river dock, a Bucyrus-Erie 22-B truck-crane with a 3,000-pound drop hammer and 45-foot leads was used to drive piles from the shore to the river dock. The drop hammer had to fall between 5 and 10 feet to drive the piles to refusal.

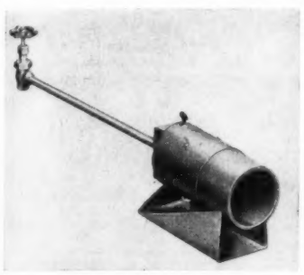
The pile bents, spaced on 15-foot centers, were capped with 30-foot long, 12×14-inch creosoted timbers and spanned with approximately twenty 6×14-inch stringers. Spans, finished with a 3-inch-thick decking, were designed for a H-15 highway loading. All the creosoted lumber was furnished and delivered to the job site on barges by the Georgia Creosoting Co., Inc., Brunswick, from its plant on the Turtle River about three miles from the site.

Work under this contract, supervised by J. T. Clifton, bridge engineer for Seaboard, also included construction of two mooring dolphins located about 150 feet on either side of the river dock and connected to it by catwalks consisting of ten 2-pile bents each. Dolphins consist of about 19 piles, driven in a cluster and tied together around their tops.

Seaboard's job was finished within the time limit, permitting ships with a 30-foot draft to unload at the new facility. A conveyor system, built on the dock under another contract, is being used by the owner for unloading operations.

THE END

Portable LP gas torches light without preheating



The Hauck portable torch burner.

■ A new line of portable torch burners is being marketed by the Hauck Mfg. Co. for use with road oil distributor trucks and asphalt, tar, pitch, and compound-melting kettles.

The torches burn liquefied petroleum, butane, or propane at 5 to 30 pounds pressure. They light instantly without preheating, burn steadily, and deliver smokeless heat through a fully adjustable flame, according to the manufacturer.

The torches are made in three sizes, with maximum fuel-consumption ratings of 145,000, 400,000, and 500,000 Btu per hour, respectively. For general maintenance and manufacturing work they are made with straight handles; for melting kettles they are made with an angle-type handle, a suspension handle, or with a leg and tongue. For distributor trucks, the torch is easily attached at the rear end of the tank to fire into the heater tubes.

For further information write to the Hauck Mfg. Co., 126 Tenth St., Brooklyn 5, N. Y., or use the Request Card at page 18. Circle No. 17.

Drillers Save time and money with HOFFMAN BITS

"The Oriented Diamond Bits"

. . . that set new records for low footage costs

Yes, Drillers who use Hoffman "Oriented Diamond" Bits are bringing up better cores from farther down—and they're doing it faster and easier than ever before. They know that Hoffman Bits last longer and use less power because they cut on a negative rake, with only the sharpest, hardest diamond cutting edges exposed to the work. Miniature Bits for prospecting—Tapered Step-Core Bits for simultaneous drilling and reaming—Special Core Bits for air and mud drilling are a few of Hoffman's complete line of bits "designed to fit the job".

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Hoffman Drilling Crews are also available for fast, efficient service on Contract Drilling Jobs.

HOFFMAN BROS. DRILLING CO.
BOX 426, PUNXSUTAWNEY, PA.

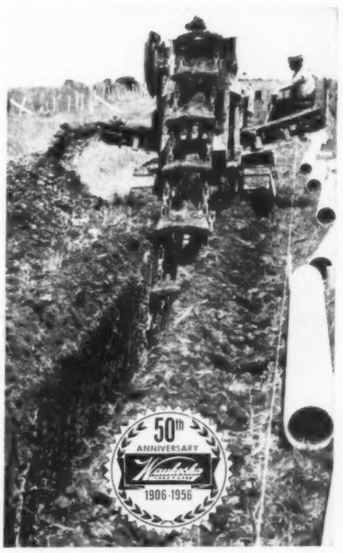
For more facts, use Reader-Reply Card opposite page 18 and circle No. 252

THE GAR WOOD-BUCKEYE MODEL DITCHER is equipped with a push-button conveyor shift—a feature that allows the discharge conveyor to be instantly shifted to the opposite side of the ditcher in order to avoid trees, utility poles, and other obstructions that can slow up operations. The D'ellasale Co. has five Gar Wood-Buckeye ditchers on this Mineola, N. Y. job, cutting through asphalt pavement in deep-sewer excavation. For more details write to **Gar Wood Industries, Inc.**, 36253 Michigan Ave., Wayne, Mich., or use the Request Card at page 18. Circle No. 14.

DIESELS *that dig...*

Mainland Construction Co., Texas City, Texas, using 155 Trenchliner powered by Model 195-DLCU Waukesha Diesel

PARSONS 155
TRENCHLINER
powered with
WAUKESHA



● Compact, low and narrow, this Parsons 155 goes where other trenchers can't. Its Waukesha Dynamic Diesel power unit gives it high capacity for digging, 16 to 26 inches wide—8 feet deep. You get 30 digging speeds (60 optional) from 5.8 inches up to 25 lineal feet per minute. At low range Trenchliner inches its way past cross pipes, through rock and other underground obstructions. At high range it makes the maximum feet-per-minute cross country. The Waukesha 195-DLCU Diesel is a 6-cyl., 302 cu. in., 4 x 4-in. power plant—prompt to start, quick to respond, economical to run, ruggedly reliable. Get Bulletin 1625.

WAUKESHA MOTOR COMPANY
WAUKESHA, WISCONSIN
New York • Tulsa • Los Angeles

320

For more facts, use Reader-Reply Card opposite page 18 and circle No. 253

The Preco back-ripper mounted on a Caterpillar 9S straight-blade bulldozer.

Back-rippers can claw as deep as 18 inches

■ New, oversize back-rippers for Cat D9 tractors have been introduced by Preco, Inc. The rippers are for use with Cat. No. 9S straight-blade bulldozers.

The rippers are comprised of four housings with pivoted shanks capped with lock-on teeth. The housings are welded to the reverse side of the straight-blade moldboard.

The outer back-rippers dig into the ground approximately 18 inches as the tractor backs up. The inner shanks rip to a 12-inch depth. On the forward trip, the rippers skid on top of the ground. Where desired, one or more of the shanks can be pinned up out of the way.

For further information write to Preco, Inc., 6300 E. Slauson Ave., Los Angeles 22, Calif., or use the Request Card at page 18. Circle No. 157.

Air-entrainer dispenser protects fluid from air

■ Dispensers for handling air-entraining agents are available from the General Equipment Co. One model takes the liquid from the original drum container and dispenses it in accurately measured volume into the mix.

Operating as a closed system under low pressure, the dispenser permits the transfer of the air-entraining agent from a distance without spillage, messy handling, or congealing. The fluid is not exposed to open air.

The complete unit includes necessary valves, combination air-induction and fluid-discharge tap for standard drums, hose lines, and fittings. An automatic model is available for some paving mixers.

For further information write to the General Equipment Co., Highway 14 E., Box 134, Owatonna, Minn., or use the Request Card at page 18. Circle No. 10.

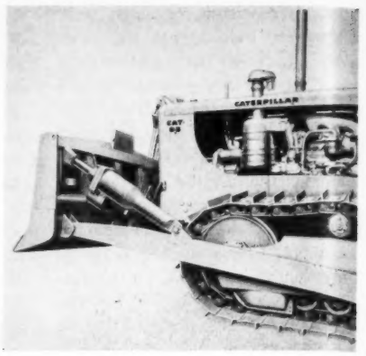
New hydraulic control tilts bulldozer blade

■ A new hydraulically-actuated bulldozer tilting attachment for use with No. 9S and 8S bulldozers has been announced by the Caterpillar Tractor Co. The new attachment is designed to give D9 and D8 tractors increased versatility on such jobs as ditching, pioneering roads on hillsides, digging rocks, and other applications which require frequent tilting of the blade.

The heart of the new tilting attachment is a large hydraulic cylinder which replaces the left bulldozer blade brace. With the right-hand brace adjusted to its neutral position, either corner of the No. 9S blade can be raised approximately 28 inches above ground level by retracting or extending the tilt cylinder. On the No. 8S, this is about 24 inches.

Additional tilt can be obtained by extending or retracting the screw-type right-hand brace. New bulldozer trunnions, designed to take full advantage of the maximum available tilt, are furnished with all new No. 9S and 8S bulldozers.

The tilt cylinder is controlled

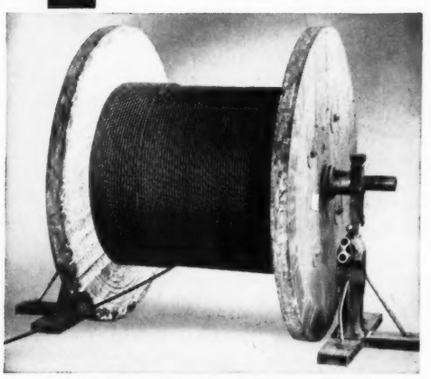


A left-side view of Caterpillar's new hydraulic tilting attachment for No. 9S and 8S bulldozers used with the D9 and D8 tractors.

Tuffy® Tips

Store Rope Like This

Keep spare rope in a dry, sheltered place free of dust, vapors or fume-laden air. If stored out of doors, set reel on blocks off the ground. Clear away weeds and grass and protect with a waterproof covering as shown. Check each month for rust caused by moisture collecting on the rope. Paint with a heavy crankcase or cylinder oil if rust is discovered or even before it shows up if moisture is present.



Unwind Like This

When getting ready to install the rope, special care should be taken to see that the reel is set up for smooth, easy unreeling. Set reel up on jacks as shown above and unreel so the rope pulls off from the bottom of the reel—*not* from the top. Coils should be put on a swift or rolled on the ground to pay off the rope. Kinks or "doglegs" may result from incorrect unreeling, seriously damaging wires of the rope and greatly reducing the ultimate life.

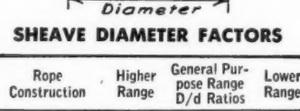
Research Adds Factual Data On Sheave Sizes

Until recently determination of sheave sizes has been by rule of thumb, experience and meager factual data. The influence of variables in operating conditions on rope life must still be determined by experience.

Insofar as bending stresses alone would be the primary cause of rope failure, exhaustive bending tests have established factual data giving a better guide than the former fixed sheave diameter and construction ratio tables.

These tests were conducted under the auspices of the Wire Rope Technical Board and the American Petroleum Institute.

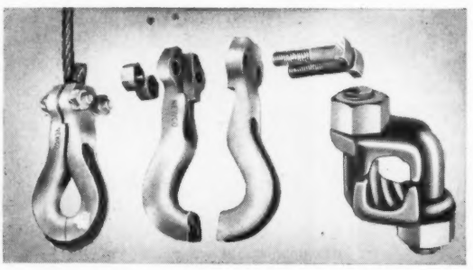
From the experimental data this developed, the following table on sheave diameter factors is introduced as a preliminary guide in selecting the proper sheave size. It lists the general purpose range on the more commonly used rope constructions based primarily upon bending stresses. If it becomes expedient to go either above or below the general range, plotted curves will be supplied by Union Wire Rope engineers for determining the change in service life due to bending fatigue.



SHEAVE DIAMETER FACTORS

Rope Construction		Higher Range	General Purpose Range D/d Ratios	Lower Range	
6x7	For example: Shaft hoists would require higher values	63	42	For example: Truck winch would require lower values	
18x7		54	36		
6x17 Seale		49	33		
6x19 Seale		45	30		
6x21 Filler Wire		39	26		
6x25 Filler Wire		36	24		
6x31		33	22		
8x19 Seale		31	21		
6x37		27	18		
8x19 Warrington		27	18		
Tiller Rope		18	12		

To determine sheave diameter multiply higher or lower range values above by the rope diameter.



Attach By Clipping

The fittings you use on wire rope can handicap it or enable it to work at full efficiency. Fittings which derive holding power by crimping action are harmful to the rope. Shown here are two rope clamps. One is a combination clamp and thimble. Both provide snug saddling of the rope and grip larger and uncrimped bearing surfaces so tightly that the loads are carried almost solely by the force of friction.

from the operator's seat by means of either a front-mounted or a rear-mounted hydraulic control. The new No. 48 rear-mounted hydraulic control has an output of 42 gpm at 1,412 rpm, 1,000 psi. The hydraulic pump is mounted on and driven by the engine rear power takeoff, and the control valve is enclosed in the tank which is mounted separately on the rear of the tractor.

The No. 48 hydraulic control is also used to operate the No. 8 ripper. A double-valve arrangement is available for combined operation of the No. 8 ripper and the No. 8S bulldozer hydraulic-tilt cylinder attachment.

For further information write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 98.

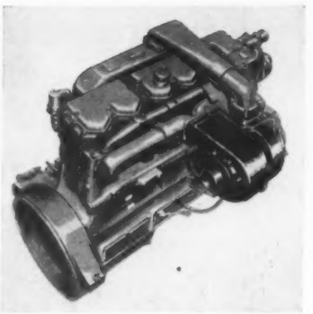
New center-hole rams are faster, more powerful

■ Speed, power, and efficiency are reported to have been increased in the new models of the OTC Power-Twin center-hole rams manufactured by the Owatonna Tool Co. The ram body has been reinforced with ribs.

Solid construction between the cylinders also strengthens each unit and a new, heavier, lower frame bracket permits more flexibility in mounting the ram, according to the company. A new four-spring mechanism provides faster and more positive ram retract action. Both the pistons and the piston seals have been redesigned for greater efficiency and longer life.

OTC Power Twin rams are recommended for use in confined quarters because of their light weight and compactness. They are made in 17½, 30, 50, and 100-ton capacities.

For further information write to the Owatonna Tool Co., 381 Cedar St., Owatonna, Minn., or use the Request Card at page 18. Circle No. 29.



The latest addition to the Cummins family of turbodiesel engines is the 335-hp NRTO-6, a 743-cubic-inch unit.

Turbocharged diesel unit delivers 335 horsepower

■ The Cummins Engine Co. has announced the production of a new turbodiesel engine, the 335-hp NRTO-6. The high output of the new unit is said to be made possible by the use of an exclusive new exhaust gas turbocharger.

The NRTO-6 was designed to meet increasing power requirements without increasing size or weight. It is recommended as a power unit for all types of equipment—off-highway hauling units, scrapers, tractors, etc.

The Cummins turbodiesel is a 6-cylinder, 4-cycle engine with a bore and stroke of 5⅛ × 6 inches and a piston displacement of 743 cubic inches. Compression ratio is 14.5 to 1.

Compared to a naturally-aspirated engine of the same cubic-inch displacement, the NRTO-6 develops 67½ per cent more power, according to the manufacturer. The new engine also produces 11½ per cent more power than a mechanically supercharged engine of the same cubic-inch displacement. The fuel rate is also lower than naturally-aspirated or mechanically supercharged engines.

All NRTO-6 engines are equipped with PT fuel systems. This fuel system allows the turbodiesel to function on all commercially acceptable diesel fuel weights, although No. 2 diesel fuel or furnace oil is recommended for best performance and lowest operation costs.

Lubricating oil is circulated by a gear-type pump, which provides positive pressure at all bearing surfaces. A tubular-type, jacket water-cooled oil cooler maintains viscosity of the oil. A 100 gpm centrifugal-type water pump provides circulation of the coolant.

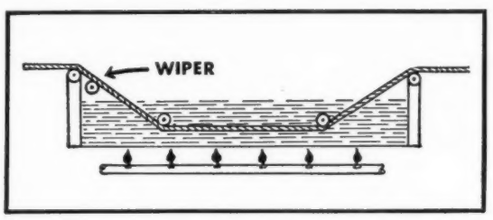
For further information write to the Cummins Engine Co., Inc., Fifth St., Columbus, Ind., or use the Request Card at page 18. Circle No. 99.

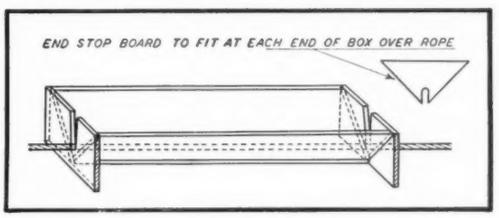
Electric tool catalog

■ The Black & Decker 1956 portable electric tool catalog is now available. Various models of drills, arbors, grinders, saws, and hammers are listed. There is a picture of each model plus a brief description, specifications, and a catalog number.

To obtain Form No. 10 write to Black & Decker Mfg. Co., Joppa Road, Towson 4, Md., or use the Request Card at page 18. Circle No. 68.

To More Than Break Even In Service Life Give Your WIRE ROPE An Even Break

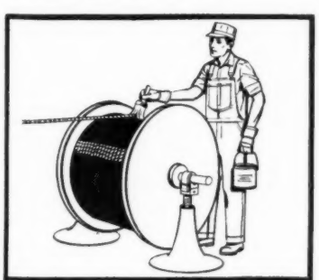


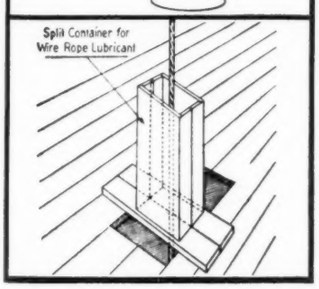


Rope That Is Stored for long periods of time should be lubricated during installation. If it is not possible to lubricate stored rope very often, apply a sealing compound to hold the lubricant that is already present.

Rope In Use can be lubricated most economically without removing it from the equipment on which it is operated. Lubricate rope as often as it needs it—service conditions determine the frequency.

Use Lubricant Hot or Cold, depending on its penetrating qualities. Your local oil company engineer will be able to recommend an oil that will actually penetrate to the working parts of the rope, and not just form a coating that peels off the first time your rope runs through a sheave.





Specifications? – say Tuffy

Tuffy Scraper Rope
Mount a reel on your scraper and move more yardage per foot. Flexible to resist sharp bends, stiff enough to resist looping and kinking.

Tuffy Slings & Hoist Line
A hoist line that gives you extra service life. Slings of 9-part machine braided wire fabric fight kinking — a matched team of balanced performers.

Tuffy Dragline
Rides smooth on drums and hugs the drum when casting. Extra flexible, yet constructed to give maximum abrasive resistance.

Tuffy Dozer Rope
Mounted on special 150' reel that lets you use rope you now throw away! Increases service life and reduces down-time. 1/2" and 9/16".

Your Union Wire Rope Distributor Is Good At Solving Wire Rope Riddles. When you have a wire rope problem, give your Union Wire Rope distributor a call for hurry-up service. Chances are you'll find he has the correct answer at hand—because part of his job is figuring out how your equipment can give you the best operation, at the lowest operating cost! Feel free to call on him anytime.

union Wire Rope corp.
2260 Manchester Avenue, Kansas City 26, Mo.
3
Specialists in high carbon wire, wire rope, braided wire fabric, stress relieved wire and strand

For more facts, use Reader-Reply Card opposite page 18 and circle No. 254

Field servicing is done by a crew with a Lincoln Lubrovan. A master mechanic, in charge of all maintenance work, directed the crews.

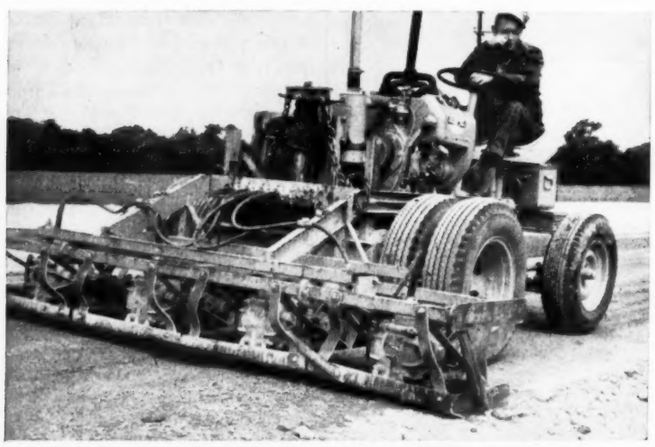
Fast-moving dirt outfit

depends on trailer-mounted equipment

If there is one distinguishing characteristic about Fredericksen & Kasler's earthmoving work, it is speed—speed gained from developing one of the most portable and flexible dirt-moving outfits now working in the West.

The Sacramento, Calif., firm, specializing in highway, airfield, and bridge work, recently demonstrated its efficiency on the $1,300,000 Trilby Wash Detention Basin built for the U. S. Army Corps of Engineers near Beardsley, Ariz., (see "Pre-watering of borrow pit hurries earth-fill dam job", C&E July, 1956, pg. 60) a job done with equipment that was completely portable. With this "hit and run" spread, Fredericksen & Kasler is able to move all or part of its equipment to areas in a number of Western states on short notice and get the machines into action almost as soon as they hit the new site.

Three keys to the speed developed by the organization are the standardization of equipment that makes repair and maintenance simple and swift, trailer-mounted equipment that can be shifted quickly; and radio communication that coordinates earthmoving operations, mainte-



JACKSON MULTIPLE COMPACTOR PROVED ON HUNDREDS OF PROJECTS

THE FASTEST, MOST ECONOMICAL AND VERSATILE MACHINE FOR OBTAINING 100% OF REQUIRED DENSITIES IN GRANULAR SOIL BASES, SUB-BASES AND ALL MATERIALS NORMALLY USED IN MACADAM BASES AND PAVEMENT WIDENING PROJECTS . . . LARGE FILLS AND SIMILAR JOBS. *EACH OF THE SIX UNITS IN STANDARD WORKHEAD DELIVERS 4200 TWO-TON BLOWS PER MINUTE.*

The Jackson Multiple will save you many, many times its cost in time and money. See it at your nearby distributor. His name and literature on request.

The photo above shows the perfect adaptability of the Jackson Multiple Compactor to pavement widening by grouping and towing individual compacting units at the side of tractor for one-pass, complete consolidation on practically every project. At left, see how the end unit on a base compacting job assumes the correct position without adjustment to contain and compact the base edge simultaneously with horizontal base compaction.

Furthermore, individual units may be fitted with operating handles and used exactly like the highly popular, standard Jackson Manually Guided Compactors for getting into the tight places that no other mechanical compactors will reach.

JACKSON VIBRATORS, INC. LUDINGTON MICHIGAN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 255

Here's how to save time

on your trailer dump operations!

Be sure to have your new trailer dumps equipped with the NEW Dun-Lockin' Automatic Tailgate Lock for ***efficiency, economy*** and accident prevention!

1. The driver never has to get out of cab;
2. Entirely mechanical (not air or hydraulic) and trouble-free;
3. Can be engaged or disengaged in only 5 seconds, without tools, for sanding or other operations, requiring manual control;
4. Fits any size body including either hydraulic or cable dump trailers; (above you see it mounted on the new frameless dump by Perfection Steel Body Co.)
5. Tailgate positively locked, cannot be jarred open.

Nothing else like it. Saves up to 10%.

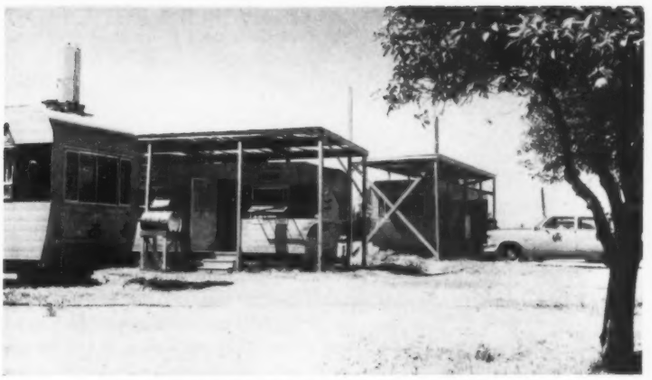
Write us today for further information:

The U. N. COMPANY, Inc.

1255 BOYLSTON STREET . . . BOSTON 15, MASS.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 256

Master mechanic Archie McConnell uses the Motorola radio unit in his pickup to call for field service on the Arizona project. The mechanic at central mechanical headquarters, where needed parts are stored, will be on the site in minutes.



Three Angelus 35-foot trailers are used on the project, two of them being provided by the contractor for Corps of Engineers' use. All office work for a project is handled from one trailer office, which can be kept operating during transit.

nance, and transportation.

Equipment standardized

Taking its over-all type of grading or excavation assignments into consideration, Fredericksen & Kasler standardized on a fleet of ten Euclid scrapers for earthmoving. One of the big advantages of this is that the range of spare parts that has to be kept in stock on the job is narrowed considerably.

For the most efficient operation, the firm uses a double pusher tractor system to get heaping loads into the Euclids. All these tractors are Caterpillar, as are the motor graders. Again, the type of spare parts that have to be kept on hand for these units is minimized. Even compaction equipment has been standardized, the firm using Southwest sheepsfoot rollers and Southwest C-50 pneumatic compactors.

The result of all this standardization, aside from reducing the stock of spare parts needed, is that costs have been lowered while production has increased. The makes and types of equipment being used are few, so that the mechanics, by repeated work on

(*Concluded on next page*)

People, Vehicles and Goods Move Easily, Efficiently when Roads are
ASPHALT

Contractors Step Up Bituminous Paving Material Tonnage, Increase Profits with Cummer Batch-Type Plants

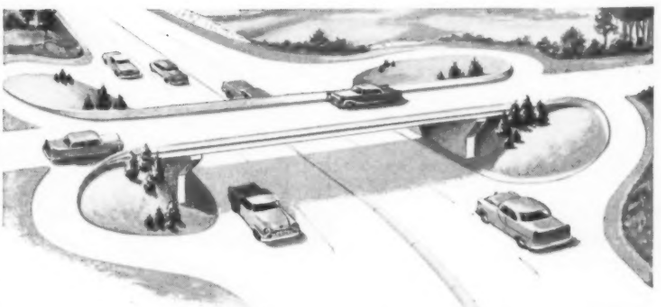
Rugged, reliable Cummer Batch-Type Plants are engineered and built to turn out big tonnages of specified mix with no variation throughout production. Whatever contractors and engineers want in bituminous paving material, Cummer Plants can be depended on to deliver maximum production at lowest cost.

Here's what Sam Finley, Inc., Oceana, Virginia, whose 100-ton per hour capacity Cummer Stationary Plant is shown above, writes: "To keep ahead of competition today, a contractor has to meet schedules on time with material as ordered—no excuses. We're always sure of complete customer satisfaction and a steady, profitable operation with our Cummer Batch-Type Plant."

All models of Cummer Plants and important exclusive Cummer features are completely described in the free illustrated Cummer catalog. *Send for your copy today.*

CUMMER THE F. D. CUMMER & SON CO.
Pioneer Builders of Fine Asphalt Plants
1827 EAST 18th ST. • CLEVELAND 14, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 257



Here's why you should make PRESSTITE-KEYSTONE a

for all your paving & building product needs

- EXPANSION JOINTS: PREMOULDED ASPHALT AND NON-EXTRUDING FIBRE OR KAPCORK®.
- ASPHALT BOARDS: TONGUE AND GROOVE JOINTS; DUMMY JOINTS.
- PRESSTITE® COLD POUR JOINT SEALER #77.
- PRESSTITE® COLD POUR JET AIRFIELD JOINT SEALER #99.
- KAPCO® HOT POUR ASPHALT-RUBBER JOINT SEALING COMPOUND.
- JETSEAL® HOT POUR JET AIRFIELD JOINT SEALER.
- KAPSEAL® CRACK FILLER.
- CONCRETE CURING COMPOUND.
- SUB-GRADE FELT . . . AND MANY, MANY MORE.

- **ONE COMPLETE BUYING SOURCE**
  No need to shop around when you can get all your wants in this giant supermarket of paving products. If you *use* it . . . we *have* it.
- **BIG SAVINGS IN MIXED-CARLOAD SHIPMENTS**
  Why carry a big inventory on low-need items? Stock only what you'll need—carry a more diversified stock—when you order under Presstite-Keystone's freight-saving "Mixed Carload Plan." Ask us about it.
- **ONE CONVENIENT INVENTORY & BILLING ACCOUNT**
  Less paper work, easier and faster handling, more net profits for you.
- **FAMOUS-NAME QUALITY**
  Two reliable names combine to bring you controlled quality, reliable delivery—and a personalized engineering service whenever you need it.

PRESSTITE Sealing Compounds — PRESSTITE-KEYSTONE ENGINEERING PRODUCTS COMPANY — KAP

A Division of AMERICAN-MARIETTA COMPANY
3788 CHOUTEAU AVENUE, ST. LOUIS 10, MISSOURI • 101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 258

(*Continued from preceding page*)

the models, are familiar with the machines. They are able to handle repairs and maintenance quickly so that equipment is never tied up in the shop. And the use of a balanced single-type spread has given everyone—from field men to office personnel—an idea of what the equipment will do, what it will produce, and what the unit costs are for each type of project.

Floating camp

The mobility of the outfit is emphasized by the very few stationary buildings, stockpiles, and materials maintained at job sites. Offices are in mobile trailers. Spare parts and supplies are stored in other trailers. Materials needed for a job are scheduled for delivery at about the time they actually will be needed by crews.

Recent additions to the outfit were four Angelus 35-foot trailers with heating systems, refrigerated cooling systems, and indirect lighting, which can be used while they are being transported from one job to another. On the Trilby Wash project, two of these units were used by Corps of Engineers technicians, two were used by the contractor.

Office procedures, streamlined like the entire outfit, made it possible for one of these trailers to be released for another job at Edwards Air Force Base, Calif., after the Trilby Wash job started. Working from the one field office, one office manager did all the job purchasing, cost record preparation, payroll work, and check issuing for this job. Such a camp is operated simply by a key force of foremen, mechanics, and operators. If additional operators are needed, they are recruited from local union halls.

Fredericksen & Kasler use two Fruehauf vans as parts trailers. On the Arizona job, one van was used to store equipment parts for dirt-moving equipment, and the other was spotted close to the outlet works and siphon where it served concrete mixing and placing equipment.

Like the office and parts supply, equipment maintenance has been put on wheels. Fueling in the field is generally done under a supply contract with a local company; on the Trilby Wash job, Richfield did the work. Of the three Lincoln Lubrovans on the contractor's equipment roster, one was assigned to the Arizona job. Manning the van was a master mechanic, in charge of the over-all maintenance work, two day mechanics and a day welder, two night mechanics and a night welder, and two oilers.

Radio saves time

Two-way Motorola equipment—used in the central base station in the company's trailer office and in seven mobile units mounted in the cars or pickups of the general superintendent, master mechanic, foremen, and mechanics—coordinates not only field work, but maintenance as well.

One of the units is used continually by the routine equipment mechanic, who handles the usual emergency calls and routine work like installing new brushes in a generator, repairing an engine on a standby pump, or overhauling a spare engine. If equipment working in the field has trouble with a steering clutch, if a hydraulic hose goes out, or if a cable breaks, he is notified by radio, and in about ten minutes, he can be on the scene with the needed repair or replacement parts.

As far as the mechanic is concerned, this communication setup is vastly more efficient than using a trouble-shooting rig on the job. It permits the mechanic to work from a central headquarters on routine projects and have access to a more complete line of spare parts and supplies that can be carried in most trouble-shooting trucks.

For superintendent W. O. Loy, radio is virtually indispensible. The Arizona job was strung out for 15 miles, and some projects cover even more ground. In the $2\frac{1}{2}$ critical hours in the morning when crews were lined up, Loy used the radio in his automobile to monitor messages between key foremen while he visited all parts of the job.

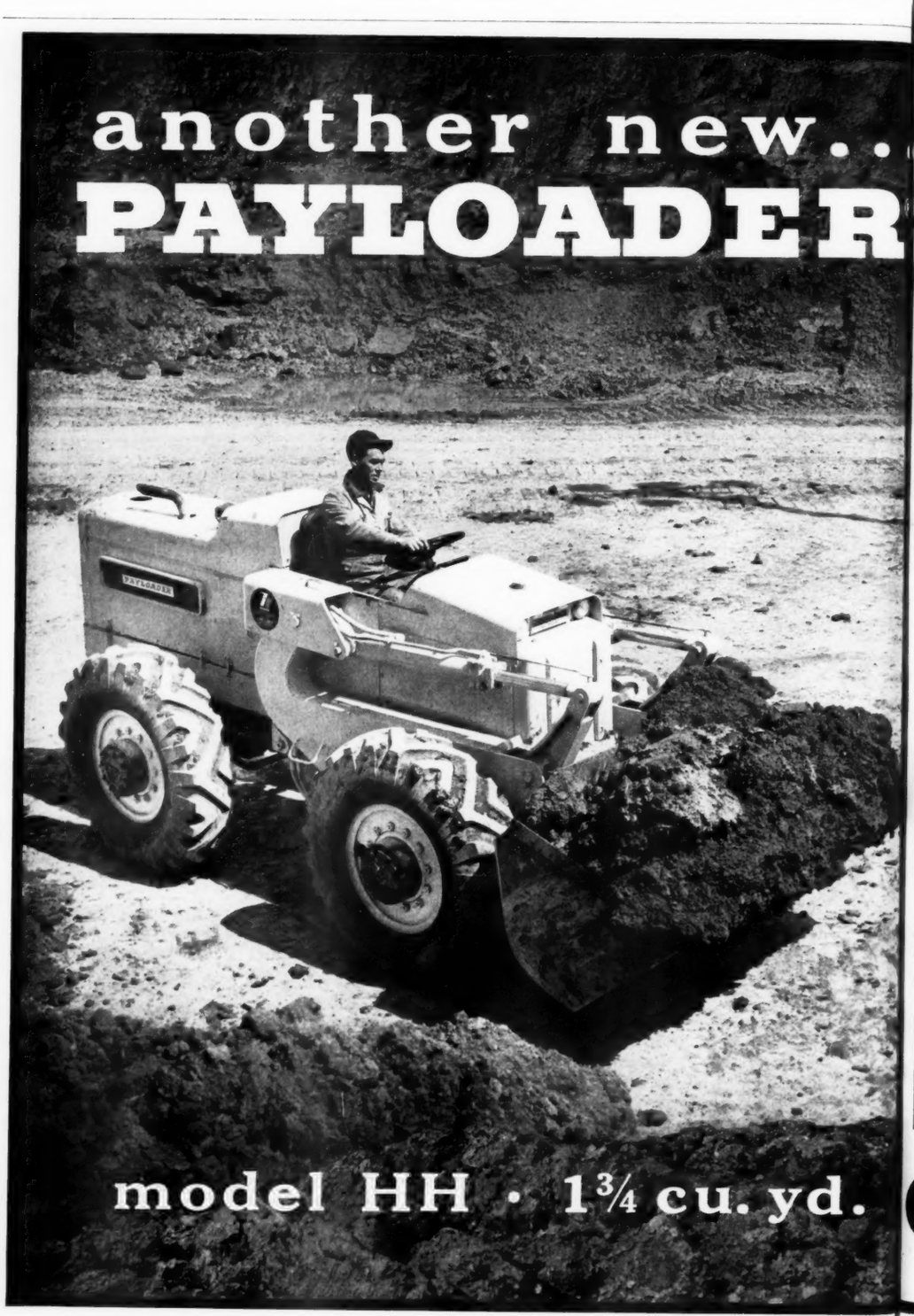
Visitors from state highway departments, the Corps of Engineers, and other agencies Fredericksen & Kasler has worked for have taken advantage of the radio setup to get in touch with Loy. In a matter of minutes from the time they stop at the office manager's trailer headquarters, they are able to speak to the general superintendent, no matter where he may be on the project. Loy was even called several times on this latest project by one of his "bosses"—Jack Kasler, a partner in the firm—who was flying over the job on progress inspections.

The mobile spread wastes no time in getting to a job and keeping it moving. And it wastes no time once a job is finished. The Trilby Wash project done, all equipment, Fredericksen & Kasler crew members, parts and supply vans, and the field office moved out, ready to start its next assignment on the same efficient, well-coordinated basis.

THE END

Form tying equipment

■ A mailing piece pictures and briefly describes form tying and concrete speciality equipment manufactured by Universal Form Clamp Co. Spiroloc



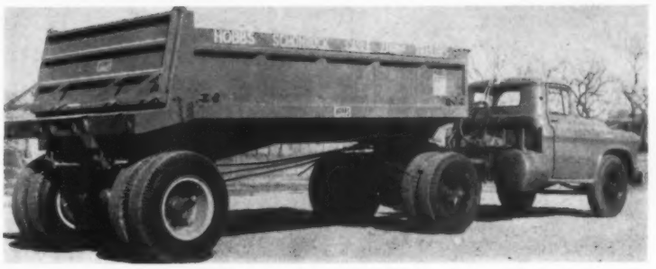
and Twistye form ties, and rod clamps are treated. Data is given on anchor slots, beam clamps, construction stakes, and single and double-cavity wall ties.

To obtain Form 3547 write to Universal Form Clamp Co., 1238 N. Kostner Ave., Chicago 51, Ill., or use the Request Card at page 18. Circle No. 159.

Euclid appoints salesman

W. B. Dickerson has been appointed district sales representative for the Euclid Division of General Motors Corp., Cleveland, Ohio, in the states of California and Nevada.

Dickerson will make his headquarters at the Euclid regional office in Oakland, Calif.



A higher dump body and improved tailgate latch are features of the 1956 Hobbs Schonrock single-axle, cable-dump trailers.

New model dump trailer teams with spreaders

■ Extra inches in height and an improved tailgate latch are key improvements on the 1956 Hobbs Schonrock single-axle, cable-dump trailer. The improvements are said to permit the trailer to haul maximum loads and to work well in conjunction with paving finishers in construction of asphaltic-concrete highways.

The trailer's dump body, which has up to twice the capacity of the average dump truck, is built higher than older models and more closely fits a spreading machine's hopper during the dump cycle. Extended rear-section skirts to channel the mix from the dump trailer into the hopper may be added with little trouble. The extra clearance gained by raising the dump body also permits the use of larger tires on the unit, the company points out, paving the way for greater payloads, better tire mileage, and less driver fatigue.

The new latching mechanism, which is said to gain holding power as load and the pull of gravity are increased on it, is an over-the-top affair at the lower corners of the tailgate. The latch's simplicity of operation makes it highly resistant to wear, according to the manufacturer.

The new single-axle trailer is available in three sizes, with 8, 10, and 12-cubic-yard capacities.

For further information write to Hobbs Trailers, 609–633 N. Main St., Fort Worth, Texas, or use the Request Card at page 18. Circle No. 96.

Portable drill converts to chain saw, brush cutter

■ An all-purpose drill that can be converted into a chain saw or brush cutter by adding accessories that require the removal and replacement of only six bolts is announced by the McCulloch Motors Corp.

The drill is recommended for such jobs as stump blasting and rock and steel drilling. It will penetrate wood, plaster, rock, or soil and is available in an assortment of sizes. Turning at 550 rpm, the power unit can drive bits 3 inches in diameter.

Total weight of the entire unit is less than 25 pounds. At idling speeds, the auger automatically ceases to turn, providing a safety factor for the operator.

For further information write to the McCulloch Motors Corp., 6101 W. Century Blvd., Los Angeles 45, Calif., or use the Request Card at page 18. Circle No. 20.

Contraction joints

■ Bethlehem Steel's dowel units—transverse joint supports for use in concrete highways, airport pavements—are described in a catalog from the firm. Standard details and assembly plans for both expansion and contraction joints are diagrammed.

To obtain Booklet 278-B write to Bethlehem Steel Co., Bethlehem, Pa., or use the Request Card at page 18. Circle No. 142.

Demolition scaffolding

■ Steel frame scaffolding for demolition is the subject of a folder from Patent Scaffolding Co., Inc. Job photos and reports point out the advantages said to result from the use of Trouble Saver scaffolding.

To obtain Folder PSS-40 write to The Patent Scaffolding Co., Inc., 38-21 12th St., Long Island City 1, N. Y., or use the Request Card at page 18. Circle No. 50.

more productive

This new, improved model HH is the finest tractor-shovel in its class ever offered. It has exclusive features that give it tremendous productive capacity for its size and enable it to *go* and *do* jobs where rubber-tire tractor-shovels couldn't operate before.

It handles easier and faster, and rides smoother, with or without a load, than any other make and can out-produce bigger machines. It has balanced design and durability throughout to do a big day's work day-after-day. Your "PAYLOADER" Distributor will be glad to demonstrate its superior performance and greater productive capacity.

Long-life, high-traction drive train: Heavy duty planetary final drives in the wheel hubs, and hypoid differential gearing keep torque low in axles . . . prolong life of axles and *all* drive train parts.

Hydraulic shock absorber: A shock absorber in the hydraulic system smoothes out the ride, permits faster load-carrying speeds over rough terrain—with less spillage.

More production, less effort: Power steer, power brakes (on all four wheels), power shift (no "clutching") and good riding qualities also lessen operator fatigue—promote full production all day.

1956 Industrial Design Institute top award for styling this "PAYLOADER", was presented to Jon W. Hauser of Jon W. Hauser & Associates.

Bigger Loads . . . Less Spillage

Special pads on bottom of boom arms give ground support for powerful pry-out action—relieve the axles and wheels of these strains. Bucket can tip back 40 degrees, before raising, to get heaped loads quick and easy even in shallow cuts and low piles, and to retain heaped loads.

Faster, Easier Operation

The "Paylomatic" transmission in this unit is a complete power-shift type Hough-built expressly for "PAYLOADER" use. It gives instant finger-tip shifting—on the go. There's no stopping for a RANGE shift, no "clutching". The forward-reverse control can also be operated under full engine speed, in any gear . . . all this, plus torque converter drive.

More Reliable Traction

Four-wheel-drive traction is even more reliable on this unit, because it has torque-proportioning differentials—an exclusive "PAYLOADER" feature. The wheels with the best footing get the most power. You get traction and *action* on sand, mud, snow.

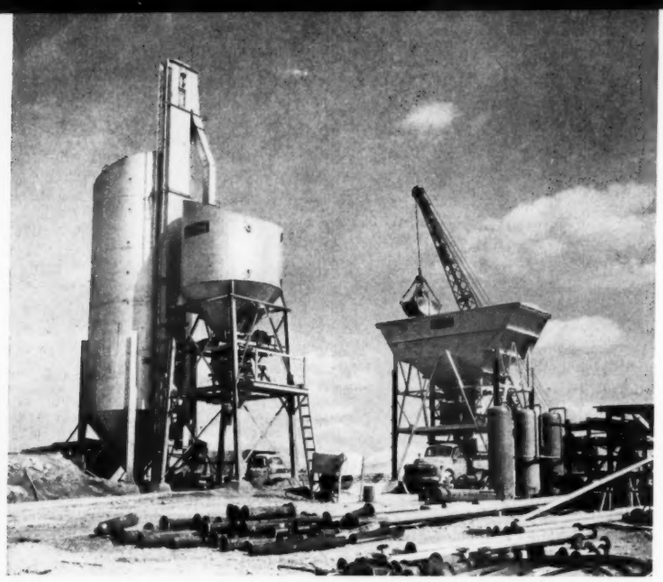
THE FRANK G. HOUGH CO.
762 Sunnyside Ave., Libertyville, Ill.
Send 4-wheel-drive "PAYLOADER" information on:

☐ model HO	☐ model HH	☐ model HU
2¼ cu. yd. Payload	1¾ cu. yd. Payload	1½ cu. yd. Payload
1¾ cu. yd. Struck	1½ cu. yd. Struck	¾ cu. yd. Struck

Name_____
Title_____
Company_____
Street_____
City_____
State_____

PAYLOADER®
MANUFACTURED BY
THE FRANK G. HOUGH CO. LIBERTYVILLE, ILL.
SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

For more facts, use Reader-Reply Card opposite page 18 and circle No. 259



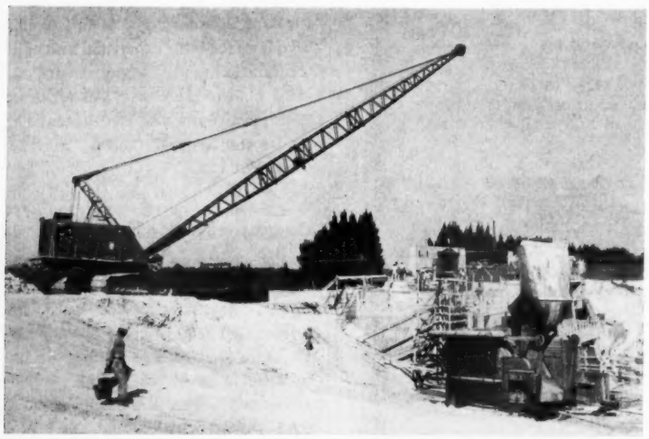
At the batch plant, a Bucyrus-Erie crane with 1¼-yard clamshell charges the Butler three-compartment aggregate bin. The Butler 980-barrel cement silo has a 107-barrel hopper and electronic devices for weighing and recording the amount of cement used per batch. *C&E Staff Photo*

Excavation and concrete forming: toughest part of pumping station job

Low-lying marshy ground provides little bearing for dragline; curved flumes, rectangular in shape, have no two sections alike

by ANTHONY N. MAVROUDIS, field editor

The new pumping station takes shape between the cofferdam, holding back the lake water, and the earth plug, left, at the end of the newly excavated feeder canal. The pumping station will be incorporated into the existing levee, like the hurricane gate structure, lower left, that will regulate the water level in the lake.



A Rex 34-E paver, being used as a mixer on this job, discharges concrete to the 2-yard bucket being handled by the Link-Belt crane that was previously used to drive sheet piling for the cofferdam. Altogether, the pumping station will require about 10,400 cubic yards of concrete. *C&E Staff Photo*

A pumping station with a minimum designed pumping capacity of 1,600,000 gpm with all four pumps working will, on its completion this November, become a small but important part of one of the largest programs ever undertaken by the U. S. Army Corps of Engineers.

This is the ambitious $300 million Central and Southern Florida Flood Control project that will protect the Lake Okeechobee-Everglades area in Florida from flooding and conserve water for the important agricultural area around the 730 square miles of Lake Okeechobee. Though the pumping station now being completed is one of the largest in the job, it is dwarfed by the size of the over-all project.

Current work will benefit an area covering central and southern Florida, a section larger than Connecticut, Massachusetts, and Rhode Island combined, that contains a quarter of the state's area, a third of its population, and half its wealth. In this area is Lake Okeechobee, a lake with one of the largest surface areas of any reservoir in the U. S., which does not have a well-defined natural outlet.

Protecting the 723,200-acre farming area with a system of levees, and building a system of interior canals for the removal of excess water calls for excavation that will have a total second only to that for the Panama Canal. The levees for flood protection alone would encircle New Hampshire and Vermont. The nine pumping stations that will remove floodwaters more rapidly than can be done by gravity flow will have a combined pumping capacity greater than Grand Coulee.

New pumping station

The $1,222,922 pumping station No. 2 now being completed will pump water into Lake Okeechobee. The

others will pump to the lake or conservation areas of the Everglades.

Belcher Oil Co., Inc., Miami, Fla., started work on this job in November, 1954, by excavating for a feeder canal that leads to the new pumping station on the southern edge of Lake Okeechobee near Belle Glade. Next to the pumping station is a hurricane gate, built prior to 1940, which was the only terminal of the Hillsborough Canal and the North New River Canal before the Belcher firm built the feeder canal. Both the hurricane gate structure and the pumping station will be incorporated into the existing levee on the lake.

Provision for increased storage in Lake Okeechobee, for flood control and for agricultural use in dry seasons, will require this levee to be raised along the northern and southern edges of the lake and new levees to be constructed elsewhere around the lake. When the protective features of this project are completed, enough water will be stored in the lake to supply an agricultural area more than double the size of lands now under cultivation.

Canal excavation

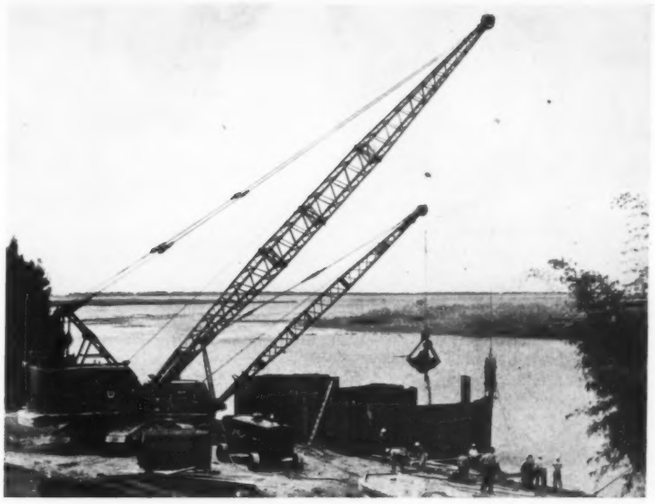
After an earth plug had been left at the end of the existing canal so that a Link-Belt 595 crane with 90-foot boom and Esco 3-yard dragline bucket could get into the excavation for the feeder canal, the area of the proposed canal was dewatered by Fairbanks-Morse pumps. This permitted the dragline to enter and maneuver in the canal area, but it was difficult to operate and position the rig because of unstable marl conditions in the low-lying land. To overcome this difficulty, the contractor fabricated timber mats that could be placed under the Link-Belt to increase the bearing qualities of the ground.

As the dragline moved forward, it kept swinging the timber mats ahead of it so that enough bearing was available at all times. From the plug at the junction of the Hillsborough and North New River Canals, the Link-Belt cut a 110-foot-wide canal to an elevation of minus 6 feet. The length of the feeder canal from the existing canals to the pumping station is 1,000 feet.

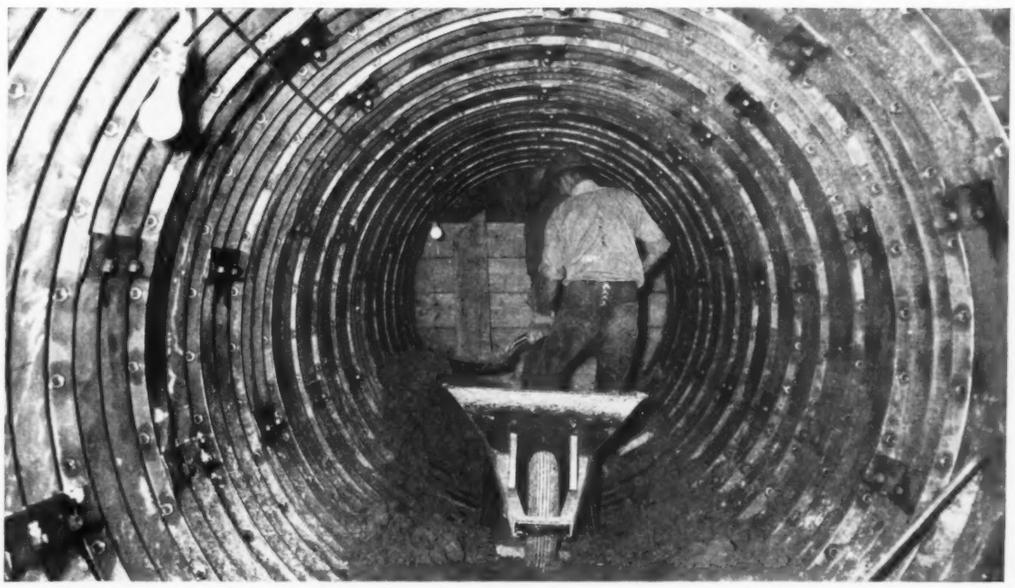
Excavated material was used to build up the work site from plus 12 feet to plus 23 feet before the concrete batch plant and other facilities for work on the pumping station were erected. The remaining excavated material was used to build up an earth plug just south of the existing levee to prevent water from entering the pumping station excavation after the feeder canal had been opened. The earth plug at the existing canal was removed to open the feeder canal only after the levee plug had been built up to an elevation of more than 23 feet.

During canal excavation, the contractor was busy building a cofferdam on the opposite or lake side of the

(Continued on next page)



While the feeder canal is being excavated, a Link-Belt crane with 90-foot boom drives 22-foot-long sheet piles for the cofferdam with a McKiernan-Terry No. 7 hammer. A Bucyrus-Erie 38-B with 70-foot boom and 1½-yard clam excavated silt and muck from the cells.



Economical Armco Liner Plates
Give You More Strength and Safety

Armco Liner Plates have more strength per pound than any other plates commonly used in tunneling jobs. This has been determined in comparative joint and compression tests. Still, Armco Plates are economical.

This extra strength lets contractors benefit in either of two ways. You can obtain adequate strength with less metal—and thereby economize on material costs. Or you can utilize the extra strength in providing greater safety for workers and the structure itself.

Actual comparative tests demonstrate that on an equal strength basis you can save 20% to 40% in weight with Armco Liner Plates. This is due to the strength developed by deep corrugations and the offset-lap joint of Armco Plates.

Principal applications for Armco Liner Plates include: sewers, conduits, service tunnels, underpasses, shafts, caissons, aggregate conveyor tunnels, storage bins, and for lining failing existing structures. Write us for more data. Armco Drainage & Metal Products, Inc., 5516 Curtis Street, Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Comparison of Weight (lbs./sq. ft.) Required by Two Types of Liner Plate to Carry Equal Loading in Actual Test

Type of Test	4-Flange Liner Plates Weight Required lbs./sq. ft.	Armco Liner Plates Weight Required lbs./sq. ft.
Joint Compression	13.1	10.0
Beam Bending	13.1	7.0

The comparison is based on a ¼" thick 4-flange type Liner Plate and a lighter gage Armco Liner Plate of equal strength.

ARMCO LINER PLATES

ARMCO®

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(Continued from preceding page)

Two Fairbanks-Morse pumps driven by GM diesel engines keep the canal side of the pumping-station excavation dry. Water is discharged through separate lines embedded in the earth plug and leading into the feeder canal.
C&E Staff Photo

proposed pumping station. The cofferdam consists of eight cells and two sheeting wing walls. The walls extend back to the existing levee, which is at an elevation of plus 34 feet. The cofferdam keeps the pumping-station excavation dry by holding back the lake water, which is regulated to have a level of 12.5 to 15.5 feet above mean sea level. It also protects against damage by hurricanes, which could wash away any form of earth embankment.

Interlocking sheeting 22 feet long was driven by the Link-Belt 595 equipped with a McKiernan-Terry No. 7 hammer. Sheeting for the cellular cofferdam was driven 6 inches into rock to reduce seepage, while a Bucyrus-Erie 38-B crane, with a 1½-yard clamshell bucket on a 70-foot boom, assisted the Link-Belt by excavating the silt and muck from within the cofferdam cells.

Pumping station excavation

With the cofferdam placed on the lakeside of the levee, and the earth plug on the canal side, the contractor was free to begin removing a 300-foot-long section of the levee. Excavation began at the top of the levee and was carried from an elevation of plus 34 feet to an elevation of minus 8 feet—approximately 21 feet below the level of the lake. This 42-foot cut—the largest on the project—included the removal of 15 feet of limerock located under the existing levee. Approximately 56,000 cubic yards of levee fill and rock was removed before the desired elevation was reached. As levee fill was removed, it was deposited in the cofferdam cells for future use as backfill. Granite riprap blocks from a commercial quarry were placed on top of the levee fill inside the cofferdam. This is a convenient place for riprap storage, and the material provides excellent protection against hurricane washout.

The contractor removed the limerock beneath the levee by dry-pitting the proposed pump station site and using the Link-Belt and Bucyrus-Erie cranes equipped with dragline buckets for excavating. This rock, which usually breaks up under a dragline bucket after it has been dry-pitted, was also used to fill the cofferdam cells.

A Rex gasoline-driven pump was then placed on the lake side of the proposed pumping station, adjacent to the cofferdam, to remove water from that part of the excavation. Water was removed from the opposite side of the pump station by two Fairbanks-Morse pumps, driven by GM diesels, that were installed adjacent to the levee earth plug. The Rex pump discharges its water through an opening which passes through the cofferdam and into the lake, while the two Fairbanks-Morse pumps discharge into the feeder canal through individual lines embedded in the levee earth plug.

Concrete batch plant

The contractor's batch plant, located on the built-up area adjacent to the feeder canal and levee plug, is supplying more than 10,400 cubic yards of concrete for the pumping station. With the exception of the steel intake flumes and diffusers, the 90×146-foot pumping station is one solid mass of concrete from minus 8 feet to plus 34 feet.

The concrete plant consists of a large Butler three-compartment aggregate bin and a Butler 980-barrel

A PCA "Engine-Take-Off" mixer truck—one of 42 IH FC-402-L Trucks with T. L. Smith Integral Mixers and Fuller 5-C-650 Transmissions.

FULLER Transmissions all the way for PCA

"We've learned from experience that Fuller Transmissions are by far the most dependable we've ever used," says R. O. Lippi, Manager of San Francisco's Pacific Coast Aggregates, Inc. That's why PCA always specifies Fuller Transmissions on its new mobile equipment.

PCA, one of the largest and most successful aggregates producers in the country, operates 13 producing and 18 batching plants in Northern California; is a wholesale distributor of building materials.

Fuller 5-C-650 Transmissions are used in PCA's entire fleet of 42 new International "E.T.O." trucks . . . the unique and highly practical "Engine Take-Off" mixer trucks that eliminate the mixer engine and make it possible to carry 6½ cu. yd. payloads within California state weight laws.

Its fleet of 16 diesel powered Wooldridge Terra Cobra wagons, used in the harvesting operation to produce rock, sand and gravel, is equipped with 200 hp HBIS Cummins engines and Fuller 4-speed 4-A-112 heavy-duty transmissions.

In addition, the entire PCA fleet of 200 trucks is equipped throughout with dependable Fuller heavy-duty transmissions.

On job after job, where loads are the biggest and the going is the toughest, you'll find Fuller Transmissions putting horsepower to work efficiently. Next time you order heavy-duty construction equipment, specify Fuller Transmissions.

From over 110 models available for rubber-tired equipment, you will find a Fuller Transmission designed to do *your* job.

One of PCA's fleet of Wooldridge Terra Cobra wagons equipped with Fuller 4-speed 4-A-112 Transmissions.

Fuller **FULLER MANUFACTURING COMPANY**
Transmission Division, Kalamazoo, Michigan

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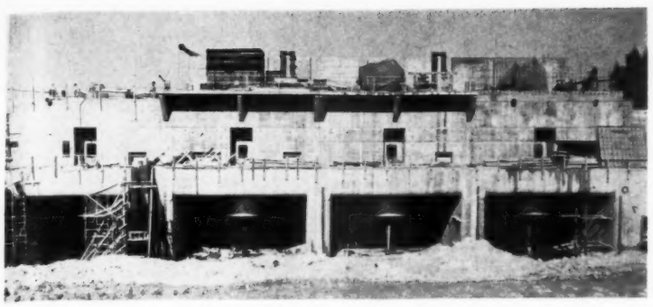
For more facts, use Reader-Reply Card opposite page 18 and circle No. 261



On the suction side of the station are the four bays for the vertical shaft of the impeller pumps. Pump impellers, 131.5 inches in diameter, will be driven, through reduction gears and a 10-inch-diameter steel shaft, by Fairbanks-Morse diesels on top of the pumping station.

C&E Staff Photo

cement silo with a 107-barrel hopper. A Bucyrus-Erie crane with a 1¼-yard clamshell charges the aggregate bin.

Bulk cement is delivered to the job in air-agitated tank trailers that unload into a hopper feeding a screw conveyor. After cement passes through the screw drive, it is picked up by the enclosed 50-foot elevator running to the cement silo. Aggregates, already graded into fine and coarse standards, are delivered by truck from Miami. Fine and coarse aggregates, and sand, are stored in separate stockpiles. A typical grading of the fine and coarse aggregates consists of:

U.S. standard square mesh	Per cent passing by weight
Fine Aggregate:	
No. 4	95–100
No. 8	85–100
No. 16	65–97
No. 30	30–70
No. 50	5–35
No. 100	0–5

	¾-inch to No. 4	¾-inch to 1½-inch
Coarse Aggregate:		
2-inch	....	100
1½-inch	....	90–100
1-inch	100	20–45
¾-inch	90–100	0–10
⅜-inch	30–55	0–5
No. 4	0–5	....

Three compartments in the Butler bin hold fine aggregate, coarse aggregate, and sand, and the proper amount of each per batch is carefully weighed on a Fairbanks-Morse springless scale and manually released into the waiting batch truck under the bin. Each batch contains 1,480 pounds of sand, 1,403 pounds of coarse aggregate, and 1,403 pounds of fine aggregate, all measured dry. As soon as trucks receive their batches, they drive to the cement hopper, where they pick up 683 pounds of cement. Cement is weighed and dumped into the batch trucks by an electronic release. This mechanism consists of a Fairbanks-Morse scale; a Bristol strip-recorder graph that records the weight, the total number of batches, and the exact time of release in hours and minutes; and a Fairbanks-Morse photoelectric cell that automatically cuts off the flow of cement when the correct amount has been released.

Batch trucks have a short haul to the Rex 34-E paver being used as the mixer on this job. The paver is spotted at the most advantageous location, both for the pour being made and batch-truck access. The paver receives its water from the feeder canal, an Ingersoll-Rand gasoline-driven pump supplying 32 gallons of water per batch directly to the machine. Approximately five ounces of Darex air-entraining agent is added to the concrete mix at the paver skip.

The paver discharges the concrete into a 2-yard bucket that is swung to the forms by the Link-Belt 595 with 90-foot boom. All forms are fabricated on the job by workmen using a 16-inch SkilSaw. Pours are consolidated by Mall gasoline-driven vibrators and water-cured by water pumped from the feeder canal. Supplying air to the various pneumatic tools is a Gardner-Denver air compressor, mounted on an Army surplus half-track that has excellent mobility when traveling over rough terrain.

Forming discharge flumes

The forming of the four discharge flumes was a tricky job because of the curved surfaces. The pumps, bells, diffusers, and the lower half of the discharge elbows are constructed of welded steel sections that end at the crest of the flumes. From the crest down, the discharge flume is of concrete so that it is an integral part of the complete pumping station.

Forming work was difficult because the discharge has no straight, flat surfaces at any point, and no two of the curved sections of a flume are alike. Each flume is shaped like a rectangular cornucopia, the rectangular opening at the crest being in a vertical position to connect to the steel diffuser.

From this point, the flume bends

AUSTIN-WESTERN HYDRAULIC CRANE

SERVES TWO PLANTS NINE DEPARTMENTS

at Hunter Douglas Aluminum Corp.

Effects Savings in Manpower, Time, Avoidance of Outside Jobs, Shipping and Maintenance Labor

Here's What They Say—"This hydraulic crane with its 18' extensible boom and 6' manual extension, its compact design, large tires to grip the ground and 4-wheel power steer for maneuverability soon showed other departments the economies to be made with the A-W when it is not required by shipping. This versatile tool has served 8 or 9 departments since January, 1955.

"Our people had watched a 20-ton crane with a similar rake used for the same purpose. The economy was soon evident of using instead an inexpensive 5-ton capacity crane which proves it has ample power for the operation.

"This hydraulic crane is well suited to handle pipe high overhead as well as in trenches or about the grounds. The crane raises space heaters and assists the men to replace roof sections damaged by acid fumes. It unloads steel beams, bars and deck roofing from cars on the switch track or at the junction or from trucks at the platform. With its towing hook it pulls cars on both our long sidings and spots them where required. It unloads aluminum ingots from gondola cars and stacks them—a job for which we formerly rented a large crane for $10.25 an hour.

"The precision of this hydraulic unit is particularly desirable in raising prefabricated or welded pipe arrangements into place in the plant.

"In construction and maintenance, the Austin-Western unit does an excellent job of pouring concrete as it comes out of the Redi-mix truck, and the pouring can just as well be two or three stories in the air."

For the complete story, ask for Gould Certified Report No. 5603.

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downward and the rectangular opening gets progressively larger until, at the vertical discharge face of the pumping station, it reaches its maximum size. The only way Belcher found to construct these multicurved flumes was to fabricate small plywood panels with radii equal to the various locations along the flume. Form-panel construction involved cutting and shaping 2×4's to the curvature of short lengths of one of the flume walls. This process had to be repeated for the entire length of each wall of the flume.

Water-soaked plywood sections were formed and attached to the curved 2×4's to produce a curved form panel corresponding to a section in the flume. Each panel section, roughly 2 feet square, was then positioned and braced until a single, larger panel was built up.

The first pour was for the bottom or floor of the discharge flume, and this was followed by pours for the vertical side walls and, finally, the top or roof of the flume. The four flumes have the same dimensions, curves, and cross sections, and the contractor was able to use the same form panels four times to complete all the flumes.

Each flume will have a lift gate that can be lowered to prevent lake water from flowing back through the pumping station when the lake level is higher than the crest of the flumes. Gates will be raised only during actual pumping operations.

When the pumping station becomes operative this winter, each of the 131.5-inch-diameter impellers will be driven by a vertical 10-inch-diameter steel shaft connected to the reduction gears, which will be powered by diesels located on top of the station. These pumps, reduction gears, and diesel engines, furnished by Fairbanks-Morse under a separate government contract, are being installed by the contractor under the supervision of a field engineer furnished by Fairbanks-Morse. Electrical power to operate the pumping station auxiliaries will be provided by three Fairbanks-Morse 75-kw three-phase 440-volt diesel generators.

Replacing levee

When the pumping station is completed this winter, the levee will be backfilled on either side of the structure with the fill stored in the cofferdam cells. Then the granite riprap will be placed by the Link-Belt crane equipped with an Erie 2½-yard clamshell bucket. When this has been done the cofferdam and the levee earth plug will be removed, allowing the station to pump the floodwaters in the network of canals from the feeder canal into Lake Okeechobee to reduce the danger of flood damage. During dry seasons, when the surrounding agricultural area requires water, the hurricane gates will be opened, allowing millions of gallons of water to fill the drainage canals for irrigation purposes.

Project evolution

The Central and Southern Florida Flood Control project by the Corps actually grew out of earlier flood-protection work in this area, which has long been subject to the ravages of hurricanes and floods. About 500 persons lost their lives in the 1926 hurricane and flood, and 2,500 more lost their lives in hurricanes and floods that followed two years later. Partial flood-protection facilities had been built in the area by the state prior to 1930, but after the 1926 and 1928 floods, the Federal government started a project involving the construction of levees and other protective works in the lake region.

Essentially completed before 1940, this project provided a navigable 8-foot-deep waterway from the Atlantic to the Gulf coasts via the St. Lucie Canal, Lake Okeechobee, and the Caloosahatchee River, together with control works in both the canal and river for regulating lake levels. Levees around the north and south shores of the lake, and five hurricane gates at the ends of major local drainage canals were also built under the program.

All these flood control features, now being incorporated in the current project by the Corps of Engineers, prevented the lake from overflowing, but did not prevent flooding from the Everglades or from direct rainfall. The most devastating flood occurred in 1947 when, after an unusually wet season, two hurricanes raked the area and secondary dikes broke, causing $59 million flood damage to the urban east-coast area, and agricultural and pasture lands in the lake region. Immediately afterward, the Corps began a comprehensive report on means of solving the flood problem, and Congressional approval of the first phase of the project came in June, 1948, a few months before two more hurricanes devastated the region. Actual construction by the Corps began in 1950, though studies, continuing since 1947, have resulted in refinements of the original plan.

Comprehensive plan

The present authorized project—part of the over-all plan—calls for increasing the storage volume in Lake Okeechobee and enlarging its regulatory outlets, plus protecting the lake agricultural area by constructing new levees on the northeast and northwest shores and raising existing levees. Agricultural and conservation areas

20-ft sections of Beth-Cu-Loy pipe for drainage of new state highway

Lane Pipe Corporation, of Bath, N. Y., fabricated these sections of 24-in. Beth-Cu-Loy pipe in 20-ft lengths for use in parallel drainage along Route 18 near New Brighton, Pa. The favorable weight-to-strength ratio of Beth-Cu-Loy corrugated galvanized steel culvert sheets made the long lengths possible, thus reducing the number of field joints and speeding the installation.

Pipe made of Beth-Cu-Loy is easy to handle, even in such long sections, and usually without need for heavy equipment. It is durable enough to withstand the impact and vibration of modern high-speed traffic. Flexible enough to simplify alignment and conform to grade. It absorbs the action of freezing and shifting soils, and reduces root hazards.

Beth-Cu-Loy is open-hearth steel with copper added for corrosion-resistance. Additional protection is provided by a thick, tight coating of Prime Western zinc. Corrugated galvanized steel culverts are still going strong after decades of service under a wide variety of conditions.

Beth-Cu-Loy culvert sheets conform to the rigid specifications of the American Association of State Highway Officials. You can get additional details about Beth-Cu-Loy, including names of fabricators who use it in the manufacture of drainage pipe, through our nearest sales office.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
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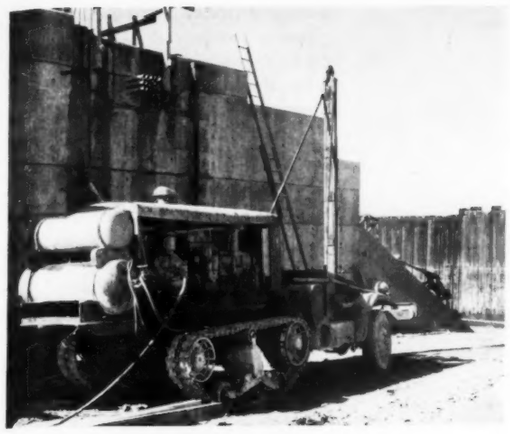

An Army-surplus half-track, which is highly maneuverable, carries a Gardner-Denver air compressor that supplies air to pneumatic tools and pumps.
C&E Staff Photo

Patch material supports loads within hours

■ A new floor-patching material over which a truck can be driven one hour after application is offered by the Building Products Division of L. Sonneborn Sons, Inc.

Called Sonopatch, the new material is described as a specially-formulated, non-bituminous, powdered mixture which sets in 30 minutes under normal drying conditions. Sonopatch yields compressive strength of over 2,000 psi after a few hours, and is ultimately capable of supporting loads of more than 10,000 pounds. After 24 hours, it hardens sufficiently to support loads under steel casters, according to the manufacturer.

For application, the material is mixed with water and poured in place to any desired thickness. It is said to be self-leveling, non-shrinking, and bonds firmly. Depending on drying conditions, it can be painted over within 24 to 48 hours.

Sonopatch also is designed for use in bolt-setting. In that application, it is poured around the bolt which has been positioned in the floor and is allowed to harden. About 4½ pounds of Sonopatch will repair a floor section 1 foot square and ½ inch deep, according to the manufacturer.

For further information write to L. Sonneborn Sons, Inc., Building Products Division, 404 Fourth Ave., New York 17, N. Y., or use the Request Card that is bound in at page 18. Circle No. 9.

are also being encircled by levees, and feeder canals are being built, and four existing drainage canals in the agricultural area are being enlarged. A line of levees from the east side of the lake southward to the Homestead area will protect the east coast. More than 125 miles of these levees have already been completed.

Other parts of the plan call for the creation of three conservation areas, taking up 860,200 acres of land not suitable for higher use, that will retain more than a million acre-feet of water. Construction of floodway canals, and control structures to prevent over-drainage, will be undertaken in the Kissimmee River Basin. Diversion canals were to be built to carry floodwaters from the Upper St. Johns River basin to the Indian River, but continuing studies of this area seem to show that flood control by storage impoundment is more practical.

Personnel

The Central and Southern Florida Flood Control project is under the supervision of the Jacksonville District of the U. S. Army Corps of Engineers, which has Col. E. E. Kirkpatrick as district engineer. C. M. Wiesenfeld, the area engineer at Clewiston, is providing field supervision of the various construction activities. Gordon Beasley is the resident engineer for the Corps on Pumping Station No. 2. C. F. DeBellevue is the project manager for the contractor, Belcher Oil Co., Inc., Miami, which also holds the contract for Pumping Station No. 3 on the south shore of the lake.

THE END

Gas, electric winch

■ Sasgen Derrick's line of Power Puller winches is treated in a folder. With a load capacity ranging from 500 to 2,000 pounds, the units can operate on gas or electric motors. The folder also contains job photos and cutaway shots of the winches.

To obtain Bulletin SP 555 write to Sasgen Derrick Co., 3131 W. Grand Ave., Chicago 22, Ill., or use the Request Card at page 18. Circle No. 53.

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Utility Tractor
and Equipment

. . . ONE Basic Unit . . .
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No matter what make of tractor you are now using—or what tractors you have operated in the past—we believe you will agree you never saw a tractor and equipment that will do so much work, pound for pound, dollar for dollar.

You don't pay for a lot of extras—features like Touch-o-matic hydraulic equipment control, heavy-duty 3-point hitch, and comfortable spring-cushion operator's seat are built right in—yours at no extra cost.

All we ask is that you accept our offer to test-drive a John Deere and make your own comparisons. What could be fairer than that?

Wheel Scraper

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Plus Many Other Power-Matching Tools

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For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 264

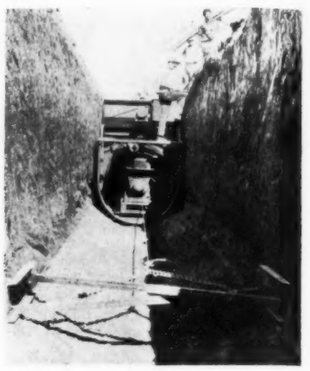
This No-Joint pipe machine manufacturers 60-inch concrete pipe.

Concrete pipe machine casts conduits in place

■ A unique machine that casts monolithic concrete pipe in place and eliminates the need for separate casting operations and heavy pipe-handling equipment is manufactured by the No-Joint Concrete Pipe Co. The machine is made in various sizes to produce 24 through 60-inch pipe for storm drains, irrigation systems, sanitary outfall sewers, and underground canals.

According to the company, the No-Joint machines permit more economical installation of concrete pipe because they combine all manufacturing and installation processes involved in constructing underground conduits. The seamless, unreinforced pipe produced is said to withstand as much as 4,000 D load where the soil is stable.

The No-Joint machine has a semi-circular steel bottom shell that fits exactly the trench excavated for the pipe. Operating parts include a Kohler 10-kw electric plant, a 3½-hp tamper motor, two Vari-Speed Syntron vibrators, and a Drivall transmission. A winch on the front of the machine and a scissors-type deadman permit the machine to pull itself through the trench as it casts the pipe.



A cable from the winch on the front of the No-Joint machine attaches to a scissors-type deadman, permitting the machine to pull itself through the trench.

Traveling forms are put down at the front of the machine as it moves forward. Concrete is chuted from transit-mix trucks to a hopper at the top of the machine. Vibration of the concrete is accomplished by the machine while the pipe is being formed.

Among advantages of the process, according to the manufacturer, are that the trench need be excavated only to the outside-diameter measurement of the pipe and that labor requirements for this type of installation are reduced considerably.

For further information write to the No-Joint Concrete Pipe Co., P. O. Box 512, Yuba City, Calif., or use the Request Card at page 18. Circle No. 123.

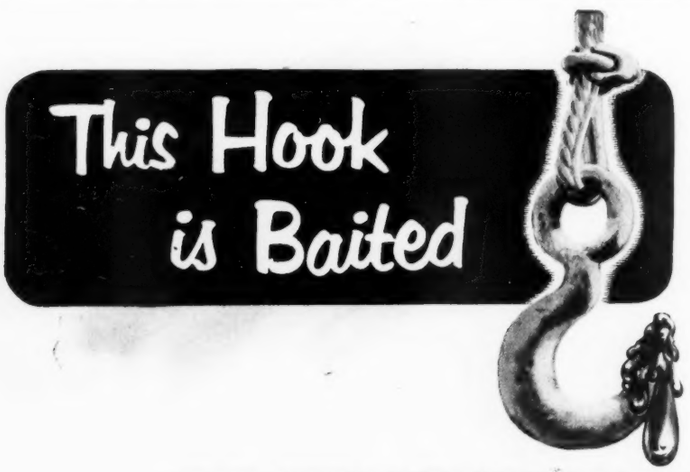
Plant washes and screens up to 100 tons per hour

■ A new stationary washing and screening plant designed for the production of up to 100 tons per hour of washed sand and gravel is available from Pioneer Engineering Works, Inc. The new plant, the Model 365W, weighs only about half as much as the larger Model 405W, which is rated at 150 tons per hour.

The Model 365W can be equipped to turn out up to four sizes, plus oversize, of washed gravel and one size of washed sand simultaneously. It can be adapted to varying product size requirements, by merely changing screens.

Water consumption runs from 500 to 750 gpm, depending on the nature and amount of raw material fed to the plant. All units are driven by individual electric motors except the 24G feeder, which is chain-driven from the feeder conveyor tailshaft. Approximate weight of the standard plant is 39 tons.

For further information write to Pioneer Engineering Works, Inc., 1515 Central Ave., Minneapolis 13, Minn., or use the Request Card at page 18. Circle No. 127.



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The sludge on that tow car hook spells big trouble for your construction equipment. Grit and dirt picked up by Diesel fuel and motor oil can do real damage to fuel injectors, cylinders and bearings. Your downtime and maintenance costs go way up, unless gritty sludge is removed constantly by effective filtration—WIX *Engineered Filtration.*

WIX saves time and money for you many ways! The WIX Line of top-quality, HEVI-DUTY Oil Filter Cartridges is *complete.* It handles every filtration requirement, including Diesel fuel and lube oil. It helps you cut maintenance costs on every filter-equipped engine with Cartridges especially designed for every application and every type of construction service. WIX surveys your filtration needs FREE, sets up an Inventory Control System tailor-made to your needs, and provides a back-up supply of every Cartridge you use, carried by your local WIX wholesaler to give you immediate service.

Ask for your FREE Survey and complete details on time-saving WIX Engineered Filtration Service. Call your nearest WIX Jobber or write direct today!

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for both Fuel and Lube Oil applications and for Full-Flow and By-pass systems. There are WIX Cartridges designed especially for

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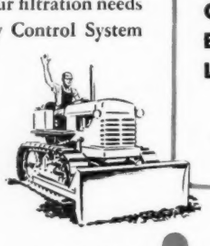

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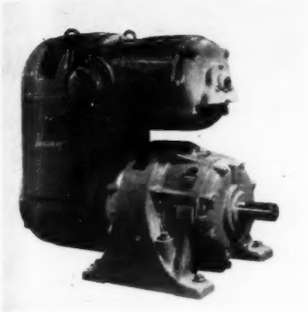


Variable-speed motors take up little space

■ Variable-speed, internally-geared motors, with takeoff shaft and power unit on the same side, have been developed by U. S. Electrical Motors, Inc. The new motors are for low-speed applications requiring variable speed, where weight distribution and limited space are factors.

Designated the Type VEV-1-GD (double-reduction) and the Type VEV-1-GM (triple-reduction), the Varidrive units are available in capacities through 5 horsepower. Both upright and horizontal assemblies are offered with either drip-proof, totally-enclosed, or explosion-proof motors.

The Varidrives provide very slow speeds and high torque, without resorting to the use of separate gear boxes, speed changers, extra couplings, guards, and other extraneous material, the manufacturer points out.

Varidrive castings are heat-treated to limit internal stresses and prevent distortion. The Lubriflush system of lubrication provides a large volume of grease around the bearings, and permits relubrication without disassembling the unit. Mechanical and electrical remote controls and Varitrol automatic controls are available.

For further information write to U. S. Electrical Motors, Inc., Box 2058, Terminal Annex, Los Angeles 54, Calif., or use the Request Card at page 18. Circle No. 125.

Front-end loader

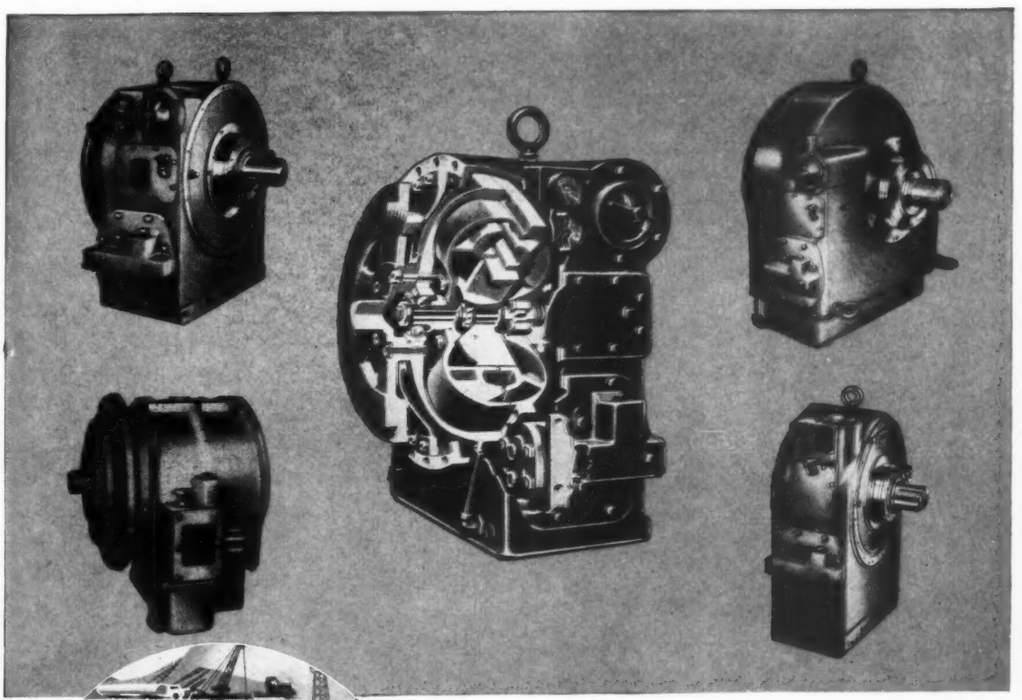
■ The Anderson front-end loader for mounting on the International 300 tractor is described in new literature available from A. C. Anderson, Inc. Outstanding features of the ½-cubic yard unit are twin-hydraulic-cylinder bucket tilt, underslung frame, and equal distribution of load. Specifications and optional equipment are detailed.

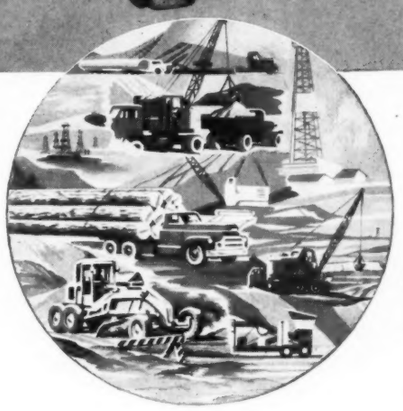
To obtain the literature write to A. C. Anderson, Inc., P. O. Box 391, Wildwood, N. J., or use the Request Card that is bound in at page 18. Circle No. 32.

Koppers buys site for research center

A 176-acre tract of land near Monroeville, Pa., has been purchased by the Koppers Co., Inc., of Pittsburgh, as the site of a proposed multimillion dollar research center. Present research activities, now concentrated in Verona, Pa., will be transferred to the new facility gradually.

THE NEW DAVEY MOBILE MACHINE SHOPS vary in content from relatively simple items of power equipment to large collections of tools and accessories. The basic units are Davey compressors and power welding generators. These are driven directly from the truck engine through a Davey heavy-duty power takeoff. The shops can be mounted on nearly every make and model of truck, according to the manufacturer. For more information write to the **Davey Compressor Co.**, N. Water St., Kent, Ohio, or use the Request Card at page 18. Circle No. 15.





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—a concise, helpful statement on how Torcon installations cut operating costs, prolong equipment life.

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For your power need, *whatever it is,* there's a "right"

TORCON Model

With a horsepower range from 15 to 600, and fly-wheel diameters from 11 to 26 inches, Torcon has a model that's right for your need—a standard unit available immediately for original equipment or for field installation.

Your real benefits begin after Torcon is installed—

- **more work and less wear: Torcon blade design balances engine efficiency and horsepower through the working range—smooth, shockless power that reduces wear, prolongs life**
- **integral unit includes oil pump, sump, pressure regulator; much better efficiency with minimum maintenance**

Are you constantly on the look-out for ways to get more efficient power at less cost? Talk to Clark—on all problems of power transmission, from flywheel to point of torque application. You'll find, as do many leading equipment manufacturers, that it's "good business to do business with Clark".

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Other Products of the Clark Automotive Division . . . TRANSMISSIONS • AXLE HOUSINGS • TRACTOR UNITS • TORCON TORQUE CONVERTERS • ELECTRIC STEEL CASTINGS • GEARS and FORGINGS • FRONT and REAR AXLES for TRUCKS, BUSES and OFF-HIGHWAY EQUIPMENT.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 266

Steelwork on new courthou

Two guy derricks, each equipped with a 110-foot mast and 100-foot boom, place steel on the fourth floor of the new Los Angeles County Courthouse.

A 6,000-ton structural-steel job, one of the largest to be done in Los Angeles, Calif., has been pushed to completion at a rate of 240 tons per day. The new Los Angeles County Courthouse was built under a contract with Gust K. Newberg Construction Co., Inc., Chicago, Ill., contractor for the new Los Angeles Civic Center, with Bethlehem Pacific Steel Co. working on steel fabrication and erection.

Structural steel in the building features an earthquake-joint design that uses riveted connections on the building's east-west dimension, and all-welded connections on the north-south dimension. Ordinarily, structural members are either all-welded, all-riveted, or all-bolted, but on this job, welding and riveting were frequently used together on the same structural joint. Bethlehem Pacific Steel Corp. did the welding first, and then, when welders had finished, started the riveting operations.

Spacing between the 266 vertical columns in the courthouse averaged 25 × 32 feet. Even though 25 feet is too much to be spanned by 2 × 12's laid flat, the working floor nevertheless had to be timbered temporarily for the protection of men working below. Temporary steel-beam cross pieces were used underneath the timber flooring and were pulled when the timber protection was removed. This added approximately 350 tons of extra material, which had to be hauled in, stored on the project when not in use, handled as each floor went up, and then removed.

Addition to Civic Center

The new courthouse will be one of the most beautiful and important additions to the Los Angeles Civic Center. Since courtroom space has been at a premium in Los Angeles in recent years, litigation has often been very much delayed. Financed by a public bond issue, the new building will house 65 superior and 38 municipal courtrooms. Upon its completion in early 1957, it is expected to consolidate all of the county's courtroom facilities under one roof.

The architecture of the new courthouse blends with that of other public buildings in the Civic Center. Located at First and Hill Street, the building measures 704 × 275 feet at its base and will have several floor levels, reaching a maximum 12-floor height in the center. Other parts of the building are eight and two stories high. Granite facing is being used outside, with terra cotta on the upper story. Of modern design, it has excellent lighting features, including luminous plastic ceilings. The architects associated in the project are J. E. Stanton; Paul R. Williams;

Set your sights on an Allis-Chalmers HD-6B

built for business on both ends

Here's what Roy Worthington, Hermitage, Missouri, says about his HD-6 with hydraulic bulldozer and rear-mounted ripper:

"More yardage per day." Production moves fast when this HD-6 team digs in. A rear-mounted hydraulic ripper plows through rock and dirt, loosens it for faster, more efficient dozing on this quarry exploration job.

"Better maneuverability." On steep hillsides or in rocky ravines, the HD-6 with 15,850 lb and almost 7 ft of track on the ground, keeps sure-footed balance. Fast-acting controls, easy shifting and full visibility put the operator in full command of his work at all times.

"Smooth-running, constant power." This is what Roy Worthington said about the 55-belt-hp Allis-Chalmers diesel engine. It delivers power for big output and has ample reserve. Stripping topsoil or digging ponds, the HD-6 is powered for more production, lower job costs, longer life.

"Simplified maintenance." Worthington's operator can leave his grease gun home for one to two weeks because the shortest lubrication interval is a full 75 hours! What's more, the HD-6 has *1,000-hour* lube intervals on truck wheels, support rollers and idlers. This eliminates daily greasing, converts maintenance time to production time.

"Excellent service." Owners know how Allis-Chalmers construction machinery dealers work with them to keep their Allis-Chalmers equipment in tip-top shape. See the dealer in your territory soon. He'll be glad to tell you more about the HD-6 and show you one at work.

HD-6B
45 drawbar hp
55 belt hp
15,850 lb

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 267

...atures earthquake-joint design

Erectors place 240 tons of structural steel per day on 6,000-ton job; welding, riveting used together on joints

A steel member is lifted into place by the derrick. The heaviest lift on the job is approximately 10 tons. Riveters and welders will move in as soon as a temporary connection is made.

Adrian Williams; and the firm of Austin, Field & Fry.

Steel closely scheduled

Structural-steel work was closely scheduled as it was very important to the progress of the project. Started early in February, structural-steel work, including all riveting and welding, was scheduled for completion in June.

Bethlehem Pacific Steel Corp. is fabricating the structural steel at its plants in Torrance and Alameda, Calif., and the fabrication, delivery, and erection are in approximate 150-ton installments. On the ground floor, there are 27 such installments, and since the installment number is plainly marked on all structural steel, the method has eliminated confusion and kept the operation running smoothly.

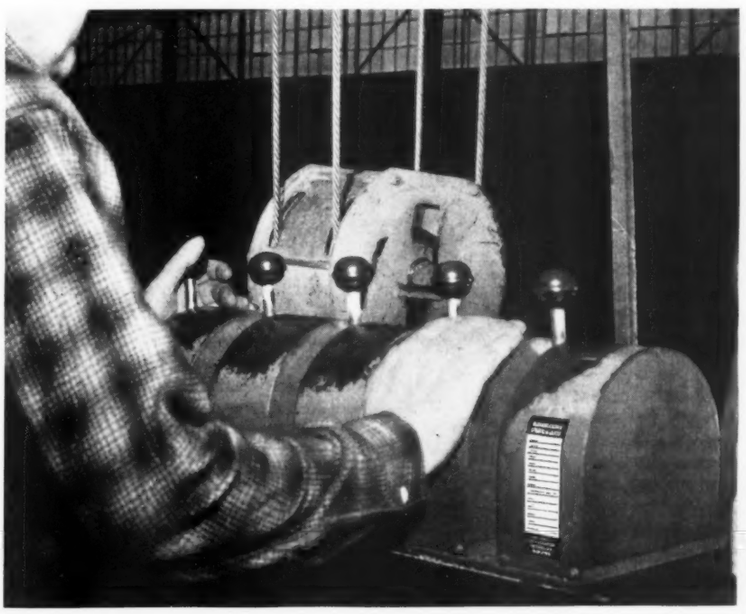
Because of a shortage of working space around the courthouse, the two fabrication plants are also being used as staging areas. Steel from the Torrance plant in Southern California is being hauled to the job by Mack trucks owned by Progressive Transportation Co., Inc., of Compton. The 400-mile one-way hauls from Alameda are being made by Paxton Trucking Co. of Alameda.

The erection of structural steel on a site as large as that of the new courthouse usually requires at least five derricks, but Bethlehem used two guy derricks, each equipped with a 110-foot mast and 100-foot boom. These machines were powered by Waukesha gasoline engines, which drove an American three-drum hoist for each machine through an Allison Torqmatic converter.

Using a 40-ton crane with a 90-foot boom and 20-foot jib on the first two floors of structural erection eased the job of the guy derricks. The crane was brought in initially to raise the entire first two floors over the whole area. A section big enough for the two guy derricks to cover was then blocked out, and they were put to work. Once they reached the top of the building, they were lowered to the uncompleted portions to start the cycle again. By handling the steel in this way, Bethlehem was able to do the work of five machines with two. The guy derricks were jumped two floors at a time as they erected the structural steel. The biggest lift for any of the machines was approximately 10 tons, which was represented in the heavier steel column members near the bottom of the building.

An organization of 55 ironworkers and 4 engineers kept the steelwork moving fast. Using three main steel-

(*Continued on next page*)



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provide valuable wire rope facts

... to test performance, speed reordering

For efficient wire rope operation you must have wire rope facts—brief, handy, accurate facts. You need them for safety (when did that line go on?). You need them for reordering (what size is the hoist line?). And you need them most of all for figuring cost (how long did it last?).

But gathering wire rope facts can be time-consuming—unless you have an easy, simple system.

Leschen's Service-Score Stickers provide such a system. The facts are always at hand—on the machine while the wire rope is working, and in the record book from then on.

Service-Score Stickers make it easy to compare the service you get from various rope constructions, types, and brands, so you *know which one is best* for you.

With the Service-Score System you prove to yourself that Red-Strand wire rope consistently exceeds industry standards for strength and safety.

Write for your starting supply of Service-Score Stickers now—or see your Leschen distributor.

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H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

HKP — A DIVISION OF H. K. PORTER COMPANY, INC.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 268

raising crews, job superintendent Jess Chelly divided the riveting work among three distinct groups. Scattered over the building, also, were 20 welders whose work was closely synchronized with that of the raising and riveting crews.

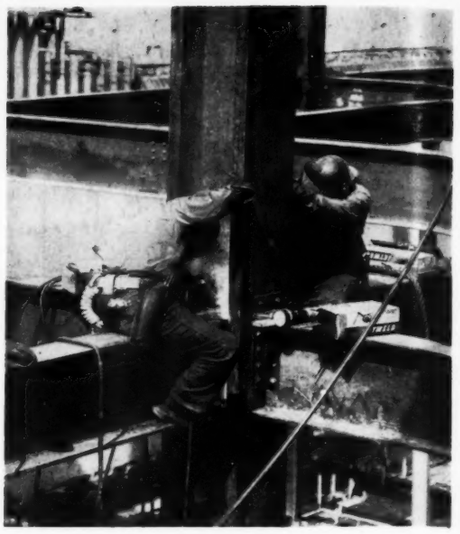
Welding

A Murphy-driven E-M 100-kw diesel-electric generating set produced electric current needed by the welders. A Caterpillar-powered Joy 260-cfm air compressor was also spotted in close, and flexible delivery tubing with frequent connectors was installed so that riveting crews could always work close to a supply of compressed air.

Twenty new Lincoln AC-type Idealarc 400 welding machines, which operated on alternating current furnished by the Murphy diesel-electric generating set, were used. For almost all groove-type welded joints, Lincoln's LH-70 low-hydrogen rod was used for the first pass and Lincoln Jetweld 2 for the second pass. All fillet welds were made with Lincoln Jetweld 1. These jet-type rods are easy to put on at high speed. Even on this type of work, where welders are slowed down by having to operate far off the ground, the average application rate was 27 pounds per welder per hour. Because welding each joint takes only an hour or so, it was done first so that riveting crews would not be detained.

Riveting

The riveting crews used Boyer No. 90 compressed-air hammers for driving. Chicago Pneumatic impact wrenches, operated off the air lines, were used for temporary bolted connections, and a Chicago Pneumatic roustabout hoist—in the form of an air tugger—handled small materials and supplies. The cable from this machine led up through a block fastened to one of the topmost structural members. Riveting crews accounted for from 270 to 300 units apiece per shift, including moving time.



Using Lincoln LH-70 low-hydrogen rods for the first pass and Jetweld 2 for the second, welders work at one of the cross points in the steel. The building has a maximum 12-story height in the center.

As the structural steel went up, 2×12 timbers, 24 feet long, were laid across temporary steel sections to protect men working below. They were removed and raised to the next level as soon as the rivets had been driven on the last exposed floor. Maintenance of planking across the ironworking area was one of the most important safety provisions.

As the steel rose, it was checked for plumb and location at least every two stories by raising two floors at one setting of a guy derrick and temporarily bolting the cross members. The vertical columns were then aligned by plumb bob and checked by a transit. Bethlehem steel cables and turnbuckles were used to hold these members in position when they were plumb. The cross members for the top story of any working level were then tightly welded in position, and the rivets driven to establish a stiff rigid diaphragm at that point. Then the lower-floor welding and riveting were completed.

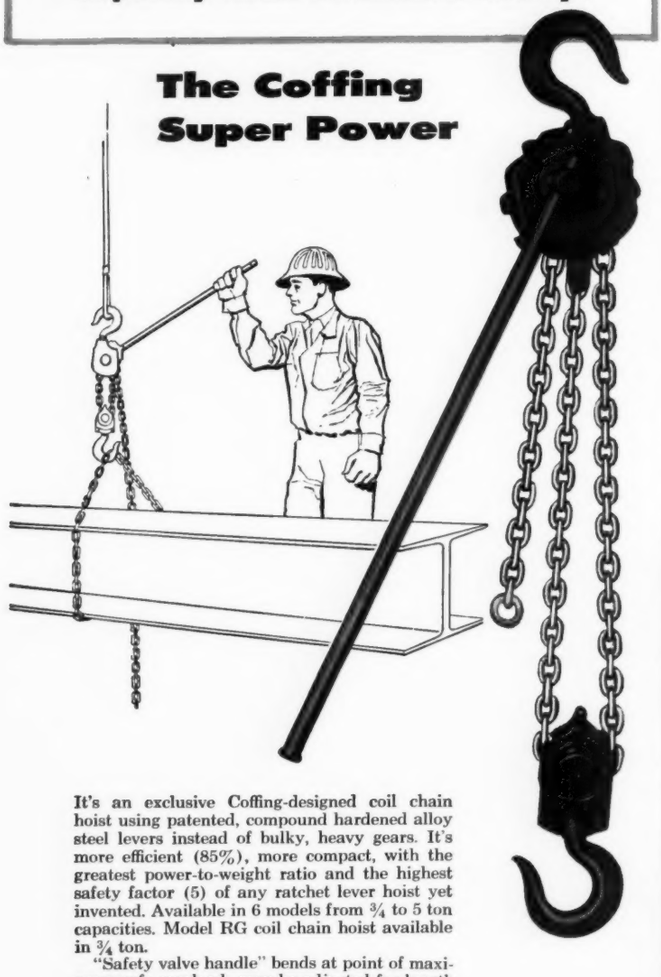
Personnel

Field personnel for the contractor included Jack Stanton, general superintendent for the Gust K. Newberg Construction Co., Inc., the prime contractor. Jess Chelly was job superintendent for Bethlehem Pacific Steel Corp., and T. M. Martinson was Bethlehem's district manager of erection in southern California.

John A. Lambie, Los Angeles County engineer, director of the project for the county, was represented by

This hoist is the most efficient lightest, safest hoist in its capacity class available today!

The Coffing Super Power



It's an exclusive Coffing-designed coil chain hoist using patented, compound hardened alloy steel levers instead of bulky, heavy gears. It's more efficient (85%), more compact, with the greatest power-to-weight ratio and the highest safety factor (5) of any ratchet lever hoist yet invented. Available in 6 models from ¾ to 5 ton capacities. Model RG coil chain hoist available in ¾ ton.

"Safety valve handle" bends at point of maximum safe overload—may be adjusted for length and operated from either side of the hoist—can't spin out of control should operator's hand slip from handle. Every hoist must withstand the shock of its capacity load dropped in increments of 1" thru 4", an impact load of well over 5 to 1. Ask your Coffing distributor for literature or write for bulletin SP, Coffing Hoist Division, Duff-Norton Co., 810 Walter Street, Danville, Ill.

COFFING HOISTS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 269

Buy MADESCO, and you benefit by over thirty years specialized experience in designing blocks for countless specialized needs. Available with heavy steel (or wood) shells, heavy fittings, plus iron or steel graphite bronze, self-lubricating sheaves, bronze or antifriction bearings. Madesco features sum up to safe, fast lifting, longer rope-life, trouble-free service. Consult your distributor for standard blocks for delivery from stock . . . and meantime write for our complete catalog. Special engineering services and recommendations also available.

MADESCO TACKLE BLOCK CO., Easton, Pa.

MADESCO BLOCKS

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the architects, J. E. Stanton, Paul R. Williams, Adrian Wilson, and Austin, Field & Fry. William F. Stockwell, a partner of J. E. Stanton, was project administrator for the architects. Brandow & Johnston, structural engineers, were under the direction of the architects. Edwin L. Adams was superintendent of construction for the architects.

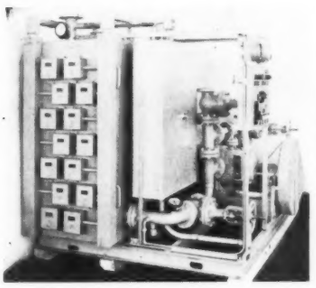
Lambie was assisted by E. C. N. Brett, chief county architect; Elmer Mohn, chief county building-construction superintendent; and C. E. Robinson, chief job inspector.

Two contractors did preliminary work at the site. Webb & White, an excavating and paving firm, removed 500,000 cubic yards of material in 1953–54. Davies, Keusder & Brown, Los Angeles, excavated and built the spread concrete footings which now support the heavy structural steel.

THE END

Low-pressure oil used in asphalt plant heater

■ An electric heater recommended for heating asphalt plants and storage tanks is available from the Parks-Cramer Co. The heat is transmitted through circulating oil at temperatures of from 150 to 600 degrees. A maximum pressure of 15 psi circulates the hot oil.



The Merrill process heater is available in sizes up to 2,800,000 Btu. This is the 300,000-Btu unit.

Merrill process units are manufactured in standard sizes ranging up to 2,800,000 Btu. According to the manufacturer, only minor alterations of existing plant process vessels are needed to accommodate the heater.

There is no necessity for staybolting jackets or installing heavy pipe coils, the manufacturer points out, because of the low oil pressure used. For the same reason, the need for a licensed fireman is eliminated.

The system can be made explosion-proof. It may also be used as a central station system so that a number of tanks or kettles may be heated at one time even though they require different temperatures.

For further information write to the Parks-Cramer Co., Fitchburg, Mass., or use the Request Card that is bound in at page 18. Circle No. 147.

Vibratory compactor is described in bulletin

■ The Roadpacker Model C, a unit that uses the vibratory method of compacting macadam bases, gravel subbases, and soil-cement bases, is described in a bulletin from the Roadequip Mfg. Co. Each of the six shoes weighs 420 pounds, and measures 26½ ×25½ inches. The shoes can be raised or lowered hydraulically, and by loosening the hinge bolts one or both end shoes can be folded up with no manual effort, according to the bulletin. Specifications and job photos are included.

To obtain Form C-55 write to the Roadequip Mfg. Co., 30210 Lakeland Blvd., Willoughby, Ohio, or use the Request Card at page 18. Circle No. 52.

KONKURE Concrete Curing Compounds

Spray application curing membranes for freshly finished concrete surfaces — meets all city, county, State and Federal specifications.

Unexcelled concrete moisture retention gives maximum strength concrete, minimizes concrete surface failures* or rainfall damage.

*In hot, dry areas, use of Konkure White is especially recommended.

GENERAL PURPOSE

KONKURE Clear — for curing concrete where retention of natural color is desired — a fugitive orange dye is used in Konkure Clear to insure application visibility — the color disappears within an hour.

KONKURE White — architecturally attractive, white pigmented, to minimize surface cracks resulting from exposure to light and heat rays in hot, dry areas.

KONKURE Black — an asphalt base waterproofing and curing compound competitively priced — also serves as a bonding agent for asphalt tile application.

KONKURE Gray — glare reducing — gray pigmented to minimize surface cracks resulting from exposure to light and heat rays in hot and dry areas.

TILT-UP and LIFT-SLAB

KONKURE P. C. C. — a resin base curing compound and bond breaker combined — may be painted without treatment upon erection.

Write or Phone for Full Information

KONKURE COMPANY

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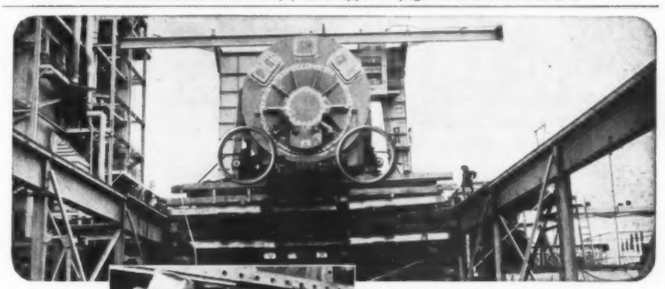

Duff-Norton air jacks

Raise Big Loads—and Profits

By ingenious use of Duff-Norton air jacks, a Dallas contractor finds that he lowers costs, speeds work, gets greater dependability and safety with these portable tools on difficult installations of big equipment.

Using two 100-ton capacity Duff-Norton jacks, the mechanical contractor, E. E. Farrow Company, raised a 240,000 lb. turbo-generator 22 ft. at the plant of the Western Farmers Electric Co-operative. Three men completed the job in 2½ days with a jacking-blocking procedure which resulted in a savings of $400.

Duff-Norton air motor jacks were also used to raise a 210-ton, 100,000-kw generator 13 ft. at the Dallas Power & Light Company, Parkdale Station. These same jacks helped cut costs of similar jobs at Haskell, Lone Star, Corpus Christi and Riesel, Texas.

Duff-Norton air motor jacks have a lift of 14 to 30 inches and are mounted on rubber-tired, roller bearing wheels for easy positioning by one man. They operate on 80 to 100 lb. air pressure.

The six Duff-Norton models range in capacity from 20 to 100 tons—weigh from 238 to 530 pounds. A sturdy base prevents tipping or settling. Safe operation is assured by an automatic shut-off which stops motor when safe limit is reached. Keyway in ram prevents the head from turning and shifting load. Lowering and lifting speed is controlled by air motor. Jacks will not creep or drop the load.

For data on these cost reducing jacks and name of nearest distributor write Duff-Norton Co., P.O. Box 1889, Pittsburgh 30, Pa. Ask for bulletin AD-11-S.

DUFF-NORTON Jacks

Giving Industry A Lift Since 1883

DUFF-NORTON COMPANY

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Better Welding
anywhere-any time
with these gas drive
HOBART welders

Hobart "Husky Boy" opens up new welding opportunities. You can put it on any job quickly, anywhere, any time —without depending on electric power lines.

GET ON-THE-JOB WELDING AT LOW COST . . . Dependable service, low operating cost and a minimum of maintenance, and repair make these three Hobart Welders the choice of operators everywhere—we have hundreds of testimonials from contractors to prove it!

Besides outstanding performance, you get these convenience features: Dual Control, Auxiliary Power for operating lights, tools, pumps, etc., away from power lines, and a choice of portable mountings.

For complete information on these Hobart Arc Welders, fill out the coupon below and mail it today—no obligation.

CONTRACTOR SPECIAL . . . especially designed to meet the needs of pipe line welding. Compact, lightweight, with a hot, fast, dependable arc.

WATER COOLED AC POWER—AC WELDER . . . a dual purpose welder that can be used for operating electrical equipment, or for AC welding independent of power lines.

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Without obligation, please send information on items checked..
☐ "Husky Boy" ☐ Contractor Sp. ☐ Water Cooled AC-AC
☐ Free Electrode Samples for_____

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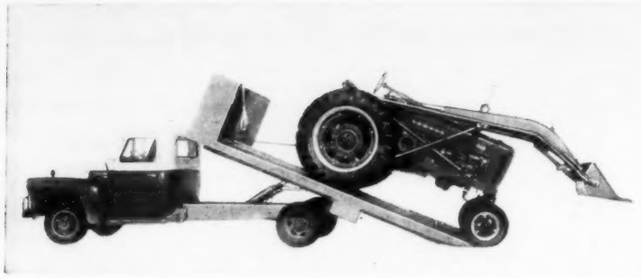


The Schwartz hydraulic platform ramp hoist is designed for hauling tractors and other heavy equipment.

New platform ramp hoist made for heavy hauling

■ A new hydraulic platform ramp hoist for trucks, made by the Schwartz Mfg. Co., is designed for use in hauling heavy equipment such as tractors and also can be used to move small or portable buildings.

Both standard and heavy-duty models are available, with 4 or 5-inch lifting cylinders and 3½ to 4-inch winch cylinders. The unit fits most trucks and has hoist ratings of 8 to 12 tons and winch ratings of 6 to 8 tons. The winch is hydraulically operated from a power takeoff. Removal of the truck frame cross members is not required to mount the hoist, according to the manufacturer.

Other features include tubular steel subframe and structural steel channel long beams, heavy-duty gear pump and valve, and built-in, adjustable relief valve. A hydraulic hold-down with an automatically operated mechanical safety hook, and a platform with a steel front to protect the cab are among the safety features.

For further information write to the Schwartz Mfg. Co., Lester Prairie, Minn., or use the Request Card at page 18. Circle No. 5.

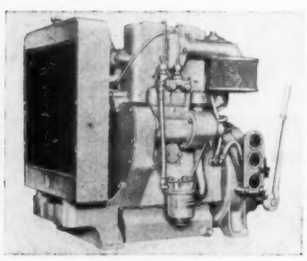
Small size, light weight features of 20-hp diesel

■ The R. H. Sheppard Co. has added a new diesel engine, comparable in size and weight to a 20-hp gasoline engine, to its line of diesel power units and generating sets.

The Model 17A is a two-cylinder power plant with 3.5-inch bore, 4-inch stroke, and 75.8-cubic-inch displacement. The fan-to-flywheel unit measures 26×22¼×17 inches and weighs 435 pounds.

The new model is also available as an open power unit, a standard power unit, a closed power unit, and as a 5 to 7½-kw generating set.

For further information write to the R. H. Sheppard Co., 47 Middle St., Hanover, Pa., or use the Request Card at page 18. Circle No. 120.

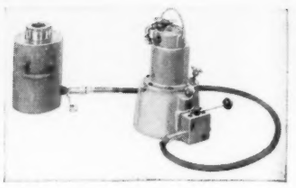


The Sheppard Model 17A diesel engine.

Hydraulic pump for jacks speeds action of rams

■ A new air-powered hydraulic pump for hydraulic jacks and pullers is announced by Templeton, Kenly & Co. Known as No. P7A, the pump is usable with all single and two-way Simplex Re-Mo-Trol rams and is said to lift seven times faster than a hand pump.

Used with Re-Mo-Trol rams, the No. P7A provides combination units with capacities of from 10 to 600 tons. It also provides 11,000 psi hydraulic pressure at 90-psi air pressure. The unit weighs 44 pounds and the oil reservoir has a 4-quart capacity.



For further information write to

Times change • Needs change

Success goes to thos/h methods to mee/d

Big jobs ahead call for a review of your equipment inventory . . . a careful review of your earthmoving methods. Some of us old timers go back to the days of team-and-scraper, team - and - wagon, wheel - and - float steam-shovel on earthmoving, with the Fresno and split-log drag for leveling and maintenance.

Then the work dimensions changed and our equipment changed to meet them. Shovels shed their steel wheels, rolled on crawlers. Steam went out and gasoline came in. Trucks replaced wagons . . . tractors, new on the farm, shed wheels for tracks, and tried for a place on the roads.

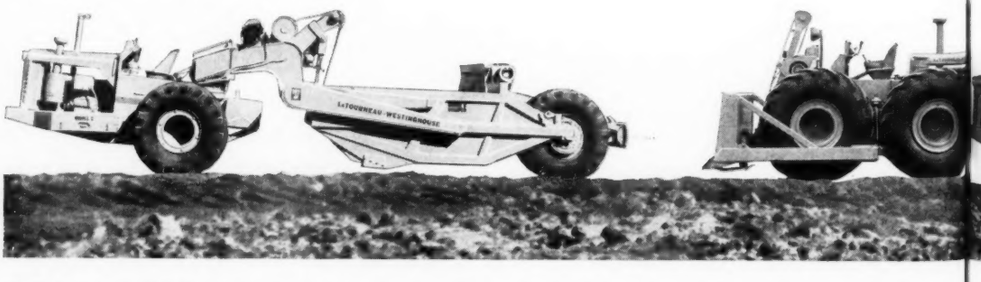
Load-haul-spread tractor-drawn wheel scrapers took over most of the short-haul production earthmoving. Dynamite replaced black-powder, jack-hammers replaced sledge-hamm/ speed and hand-drills. Leaning wheels re/et this olutionized the application range / more the early graders.

As job dimensions changed ear/ unit le moving machines made furth/ne limi changes. Diesel engines replaced u/er high of gasoline. Rubber-tired prime-mo/er twen ers hauled dirt faster and farth/Tourne Off-road rubber-tired haulers replac/orking most of the highway-type dum/swers . trucks. More power and bigger /uipmen pacity gave answers to larger p/erforma jects, shorter hours, higher wage ra/eed an

Now we can see more changes in /he prob problems of today and tomorr/obility Answers we found in the power a/g equip traction dimensions, together wi/ficult bigger buckets and bodies, no lon/r 20 y can meet all the needs we face. /proven must work in the other dimensi/und a

TOURNAPULL-SCRAPERS—138, 208, and 293 hp models heap 7.5, 18, and 25 cu. yds. fast . . . work and travel on or off-highway at speeds to 29.9 mph. Electric power-steer turns prime-mover 90° . . . rigs make 180° turns in area narrower than machine's length. Power-transfer differential applies traction to wheel on firmest footing.

TOURNATRACTORS—208 hp Model "C" with 24/EAR-DU lbs. pull at 1.5 mph . . . works and travels on or off ro/08, 208, to 17 mph fwd., 7 mph rev. Giant 416 hp TWI/ off-high TRACTOR, with 65,900 lbs. drawbar pull, loads big/ns loade scrapers easily . . . has power king-pin steer . . . travels/¾ of le 20 mph, rev. to 5.8 mph. Both have torque conver/ear over



Flexibility for added utility. TOURNAPULL prime-movers earn year-round profits with interchangeable trail-units: scraper, rear-dump, bottom-dump, side-dump, flat-bed hauler, lift-and-carry crane, and logging arch. Model "D" has added utility with bulldozer and V-type snow plow attachments. TOURNA-TRACTOR Model C may be equipped with bulldozer, Angle-dozer, push-block, root-rake, railroad car-coupling, wi/ side-boom crane, tree stinger, and V-type snow plow / wing. Also pulls wheeled scraper, sheepsfoot-roller, Roo/ and other types drawbar equipment. ADAMS GRADERS a/ able with Elegrader, scarifier, bulldozer, snow plow and wi/ rotary snow plow, and snow-blo attachments.

Templeton, Kenly & Co., 2525 Gardner Road, Broadview, Ill., or use the Request Card at page 18. Circle No. 61.

Draw-type levelers with 2, 2½-yard bowls

■ Two new draw-type levelers for use with tractors of 20 or more horsepower have been announced by the Raymond Gurries Mfg. Co.

The Model GL-8 is an 8-foot machine with a 2-cubic-yard bowl, and the Model GL-10 takes a 10-foot cut and has a 2½-cubic-yard bowl. In both models, the bowl is hydraulically raised and lowered by a single hydraulic ram.

The new Gurries levelers are for use with tractors of 20 or more horsepower.

Hydraulic power is furnished by any single-valve tractor-mounted power-control unit. Cutting depth is easily adjustable for leveling or digging.

For further information write to the Raymond Gurries Mfg. Co., 1720 S. First St., San Jose, Calif., or use the Request Card at page 18. Circle No. 134.

Pipe vise adjusts quickly to hold 4 to 20-inch pipe

■ A new model of the Gravity Grip pipe vise, especially designed to hold asbestos-cement and clay pipe, is now available from the Spring Load Mfg. Corp. The Model V-20 vise holds the pipe at a convenient working height

The Spring Load Model V-20 Gravity Grip pipe vise is especially designed for asbestos-cement and clay pipe.

and angle, adjusts in a matter of seconds to hold from 4 to 20-inch pipe, and gives steady and complete control, according to the manufacturer.

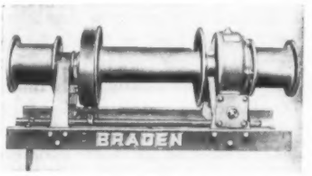
While especially designed for use with Spring Load's pipe cutter, machining, and tapering tools, it works equally well with all similar tools. The vise weighs approximately 48 pounds.

For further information write to the Spring Load Mfg. Corp., 3610 First Ave. S., Seattle 4, Wash., or use the Request Card at page 18. Circle No. 106.

Ten-ton winch features alloy-steel drum shaft

■ A new low-speed, 20,000-pound-capacity winch for 1½ and 2½ ton trucks is available from the Braden Winch Co. It is the MS10-18B.

In addition to the Braden oil-cooled, automatic safety brake, the MS10-18B features a heat-treated



alloy-steel detachable drum clutch plate. It has a thrust ring within so that the worm housing will carry the thrust of the cable drum in either direction. A band brake on the cable drum and full cab controls for both drum brake and clutch are standard equipment.

The alloy-steel drum shaft makes increased winch load capacity possible, the manufacturer points out. The winch also incorporates an aluminum-bronze worm gear and heat-treated drum shaft keys. The gear ratio is 32:1.

For further information write to the Braden Winch Co., P. O. Box 547, Broken Arrow, Okla., or use the Request Card at page 18. Circle No. 112.

←For more facts, circle No. 274

hos/ho can anticipate and change
nee/day's and tomorrow's needs

e-hamme speed and mobility if we are to
wheels re get this new and growing challenge
a range more and more yards to move,
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power a g equipment presented some very
her w fficult engineering problems. Over
no lon r 20 years of field experience and
face. I provement, we believe we have
imensi und and perfected some real answers to these problems and, today, can give you most for your money in dependable rubber-tired equipment performance applied to the four dimensions of 1. power, 2. traction, 3. speed, and 4. mobility.

As you equip for the tremendous growth in earthmoving ahead be sure to study carefully the improved line of LeTourneau-Westinghouse self-propelled scrapers . . . rear-dumps . . . tractors . . . and graders. Every one of these machines is a better machine than we offered last year or in the years before. Every one of them offers big advantages in speed and mobility that will be more and more important to you in solving all the problems involved in the bigger and bigger earthmoving projects ahead of us.

May we suggest that you call your LeTourneau-Westinghouse Distributor today and ask him to help you check your present equipment inventory and recommend a planned program of replacement and additions to meet your needs for the future. Then take time to see these up-to-date machines of ours perform on your own job *or on jobs like yours.*

We would also like to suggest that you plan to order well ahead of required delivery. The best equipment for you is best for others, too, and, in spite of a tremendous increase in our manufacturing facilities, we are having difficulty in keeping up with demands from our many customers who have already proved the importance and value of greater speed and mobility on their own jobs.

th 24,7 **EAR-DUMPS**—11, 22, and 35-ton haulers powered by
off roa 38, 208, and 293 hp Tournapull prime-movers, haul on
o TWIN off-highway to 34.4 mph. 90° turn-ability permits 180°
ds bigg ms loaded, in space narrower than machine's length . . .
travels ¾ of length with dump-body raised. These units dump
conver ear over bank, pull out with front-wheel drive.

ADAMS GRADERS—Heavy-duty models, 20,900 to 27,730 lbs.; 80, 104, 123, 150 hp . . . have 8 fwd. speeds to 26 mph, 4 rev. to 13 mph, and 3 optional creeper speeds. Utility grader, 60 hp, 14,865 lbs., 18.3 mph; 5 fwd., 1 rev., 4 optional creeper speeds. TRAVELOADER, to 26 mph, loads 600 yds./hr.

Adams, Rooter—Trademark, Tournapull, Tournatractor, Angledozer—Trademark Reg. U.S. Pat. Off. G-1102-H

LeTourneau-WESTINGHOUSE Company

Peoria, Illinois

A Subsidiary of Westinghouse Air Brake Company

avoid legal pitfalls

Bulldozer damaged underground cable

THE PROBLEM: *After a telephone company had laid a trunk cable under unimproved land, pursuant to a recorded easement with the owner, a subsequent owner hired a contractor to clear the land for a residential and business center. In the course of the work, a bulldozer blade struck the cable and damaged it. Neither the owner nor the contractor knew that there was a cable underground. (1) Was the owner liable? (2) Was the contractor liable?*

THE ANSWERS: (1) Yes. (2) No. (Mountain States Telephone & Telegraph Co. v. Kelton, 285 Pac. 2d 168, decided by the Arizona Supreme Court.)

The court said that the contractors were in the legal "clear" because they did not know or have any reason to know that there was a cable under the site. The court rejected argument that the contractors were bound to explore the site before excavating to ascertain what might be lying beneath. Nor were the contractors bound to examine public records to determine whether there were any recorded easements.

But the court decided that the owners were liable, because they actually knew of the telephone company's easement, and were also bound to know of it because it was a recorded incumbrance of the title when they purchased the land. They knew that the clearing operations would involve excavations four or five feet deep, and yet did nothing to guard against what happened.

As to the contractors' liability, the Arizona court referred to a similar New York case where a grading contractor struck an underground pipeline, but was not held liable even though there was a recorded easement. (Socony-Vacuum Oil Co. v. Bailey, 202 Misc. 364, 109 N. Y. Supp. 2d 799, 801.)

But the court recognized that a contractor excavating in a public street stands in a different legal position from one who excavates private land. Reference was made to the decision of the Illinois Appellate Court, Second District, in the case of Illinois Bell Telephone Co. v. Chas. Ind Co., 3 Ill. App. 2d 258, 121 N. E. 2d 600. There the telephone company was declared to be entitled to damages for injury to its cable caused by a sewer contractor. The opinion in the Illinois case, in turn, refers to several appellate-court decisions substantially to the effect stated by the New Jersey Supreme Court: that a plumber engaged to install a water pipe was bound to know that beneath most public thoroughfares are gas pipes, water pipes, conduits, etc. "One cannot be permitted to shut his eyes to this condition and blindly . . . dig up a street without taking that . . . care necessary to refrain from . . . injuring the property of others." (Public Service Ry. Co. v. Mooney, 99 N. J. L. 58, 125 A. 328, 330.)

First HOBBS Schonrock Cable Dump TRAILER in CUBA — owned by Saturnino Gonzales — used at Camao Quarries, Havana.

Through the Western Hemisphere

HOBBS Schonrock Cable Dump TRAILERS
INCREASE HAULING PROFITS

SALES, SERVICE AND PARTS ARE NEARBY

Here are the trailers which have revolutionized the contract hauling industry from Alaska to South America — Hawaii to New England. Check owners and operators — and with the HOBBS Distributor nearest you. Get figures on how HOBBS Schonrock Cable Dump TRAILERS can increase your profits.

Seldom does anything ever stop a HOBBS—but should any parts or repair service be needed, there's little down time waiting for them. Every owner is furnished with a manual which shows how to assemble each unit—and how to order each readily available part.

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Birmingham, Ala.	Leary & Owens Mach. Co., Inc.
Mobile, Ala.	Betheze Mfg. & Dist.
Little Rock, Ark.	Diamond T Sales and Service
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Grand Junction, Colo.	W. R. Hall Sales & Service Co.
Bridgeport, Conn.	Transit Sales Co.
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Nashville, Tenn.	W. T. Stringfellow & Co., Inc.
Dallas, Texas	Hobbs Trailers
El Paso, Texas	Hobbs Trailer Sales Co.
Houston, Texas	Hobbs Trailers
Lubbock, Texas	Hobbs Trailers
San Antonio, Texas	Hobbs Trailers
Salt Lake City, Utah	Utility Trailer Sales
Seattle, Wash.	Transport Trailer & Eqpt. Co.
Spokane, Wash.	Alloy Manufacturing Co.
Milwaukee, Wisconsin	Brake & Equipment Co.
Casper, Wyoming	Century White Truck Co.

CANADA

Calgary, Alberta	Alberta White Trucks, Ltd.
Edmonton, Alberta	Edmonton-White Truck Sales, Ltd.
Regina, Sask.	Regina Motor Co. of Canada, Ltd.

SOUTH AMERICA

Puerta La Cruz, Venezuela	Fimag, C. A.

HOBBS TRAILERS • FORT WORTH, TEXAS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 275

Court holds promise to increase payment void

THE PROBLEM: *A subcontract to clear and grub a highway-construction site specified the price to be paid. Could a subcontractor collect more than the stipulated amount on the grounds that the contractor had promised to protect him against loss under the contract and that it appeared that performance at the agreed price would bankrupt him?*

THE ANSWER: No. (Buker v. Mt. Vernon Contracting Co., 146 N. Y. Supp. 2d 879, decided by the New York Supreme Court, Appellate Division, Third Department.)

The court remarked that when the subcontractor agreed to go ahead if paid more than the contract price, he merely agreed to do that which he had already undertaken to do. The cost of performance exceeding what he had expected was a risk that he took.

Licensing of engineers is held constitutional

THE PROBLEM: *A Michigan statute provides for the separate licensing of architects, professional engineers, and land surveyors. Did the defendant, a registered professional engineer, violate the law by advertising as an architectural engineer and builder?*

THE ANSWER: Yes. (People v. Babcock, 73 N. W. 2d 521, decided by the Michigan Supreme Court.)

The court said that there is such distinction between an architect and an engineer as to justify separate licensing. An architect's services re-

quire application of the principles of architecture, while the engineer deals with engineering principles. Nor is the law void for unjust discrimination in exempting architects and engineers working temporarily for not more than 60 days, or for the United States, or for railroads. The law is a proper regulation designed to safeguard the life, health and property of citizens by exacting reasonable qualifications of those engaged in the professions.

Edited by A. L. H. STREET
Attorney-at-Law

These brief extracts of court decisions may aid you. Local ordinances or state laws may alter conditions in your community. If in doubt consult your own attorney.

Contractor did not use services of hired man

THE PROBLEM: *A written contract specified that the defendant, a contractor, hired the plaintiff "as general supervisor and construction superintendent on the next immediate construction project of" the defendant. Plaintiff's duties included "procuring bids from subcontractors, coordinating the work of the subcontractors, and cooperating with the engineers and architects." For his services, the plaintiff was to receive 10 per cent of the total net cost of construction, that is, the cost of labor and materials. The defendant completed a 10-unit apartment building without using plaintiff's services and without his knowing that the construction was in progress. Was plaintiff entitled to collect damages from defendant?*

THE ANSWER: Yes. (Poles v. Glass, 288 Pac. 2d 986, decided by the California District Court of Appeals, Second District, Los Angeles.)

Apparently, the court awarded the full percentage compensation provided for by the contract. The court decided that the contract was not so worded as to require plaintiff to devote his full time to the employment.

Subcontractor's liability to general contractor

THE PROBLEM: *Under certain circumstances can a subcontractor become liable to the general contractor for reimbursement of damages assessed against the latter for delayed completion of work, due to default on the part of the subcontractor?*

THE ANSWER: Yes. (United States v. A. J. Rife Construction Co., 224 Fed. 2d 600, decided by the United States Court of Appeals, Fifth Circuit.)

But in this case a millwork subcontractor was not liable because he did not know that there was a liquidated-damage clause in the prime contract. Furthermore, the subcontract did not specify a delivery date; there was no proof as to what was a reasonable time for delivery; and there was evidence showing that a 90-day delay in completing the prime contract was due partly to other causes.

Contractor held liable for injury to child

THE PROBLEM: *A small child was injured when he fell into a septic-tank excavation that had been left unguarded by a contractor. Was the contractor liable in damages?*

THE ANSWER: Yes. (Cockerham v. R. E. Vaughan Corp., 82 So. 2d 890, decided by the Florida Supreme Court.)

The decision was reached by a narrow vote of four to three by the judges of the court. The majority reasoned that the case was governed by a rule of law to the effect that for as long as work remains incomplete, the contractor has such possession of the work site as to make him as much liable for maintaining a dangerous condition of the premises as if he were the owner. It was for a jury to determine from the evidence whether or not the contractor should have foreseen the likelihood of neighborhood children playing about the excavation and guarded against accident.

Reference was made to an earlier Florida case where damages were awarded in favor of a child who, while playing about a building under construction, pulled upon himself a precast concrete window frame that had been left by a subcontractor in an insecure position.

Foreign income is tax-free

THE PROBLEM: *An American spent almost two years in Ethiopia as administrative assistant to a road builder who had been engaged by the United States Bureau of Public Roads. The Bureau was paymaster, but the salary payment was the obligation of the Ethiopian government. Was the income earned from sources*

Adams 660, push-loading a Model D Tournapull, kept firm footing in this heavy gumbo. Special push-plate was made by contractor.

Excavates and sub-grades streets for Wichita subdivision

At Woodlawn Village, a new residential subdivision east of Wichita, Kansas, Ritchie Bros. Construction Co. of Wichita contracted to excavate streets in a section of this 160-acre residential development by Wheeler-Kelly-Hagny Realty Co.

The Ritchies used 3 self-propelled scrapers and an Adams 660 grader to handle this street excavation work. The "660", with its wide range of speeds — forward and reverse — got around fast to push-load the 3 scrapers and level sub-grade for subsequent paving. Machines worked in heavy gumbo most of the time.

Foreman J. H. Boaz said this about the grader's performance:

"I have had over 20 years' experience in all types of construction, both heavy and light. The 660 is the best all-around grader I have seen."

Operator Dean Wolf used 2nd gear, 3.3 mph, to push-load. "It seems to me," Wolf stated, "that the Adams is the best grader in use today. The machine outperforms any I have used, and visibility of the blade is good."

Wide range of speeds gives Adams the advantage in working any kind of material. Heavy Adams graders have 8 forward speeds, to 26 mph. With optional "creeper" gears, 3 extra-low speeds, from 0.23 to 1.82 mph, may be added. These low speeds move heavier loads, handle rocky material with greater speed and safety, insure more accurate blade control in fine finishing when the main job is done.

The "660" has four reverse speeds, to 13.7 miles per hour, which save time on shuttle-grading in narrow spaces between houses and on short passes, where quick backing enables operator to get more work done in less time. Fast reverse speed is valuable also in quick positioning to push-load scrapers, saves time for both units.

Engine develops power-to-spare

Big 150 hp diesel engine of Adams 660 starts easily in any temperature, develops power-to-spare, with lugging ability to move heavy loads in tough going. Engines in Adams heavy graders are rubber-mounted to reduce annoying vibration and promote greater efficiency of operator, with less maintenance on machine.

Heavy, box-construction, one-piece frame of grader resists shocks and stresses. Constant-mesh transmission makes gear-changing easy, lengthens life of gears.

Stops are safe and sure with double-action hydraulic brakes. Pressure on brake pedal stops transmission as well as drive wheels. Hand brake is used for parking.

◀ Quick back-up (to 13.7 mph) saves valuable time on shuttle grading. Operator has clear view of work, wide range of speeds to get more work done in less time, with Adams 660.

Use performance yardstick

Buy your next grader on the basis of performance. Let us show you a modern grader at work, help you select the size best suited to your type of work operation.

A size ADAMS for every need

Model 660—150 hp diesel, 27,730 lbs.
Model 550—123 hp diesel, 23,500 lbs.
Model 440—104 hp diesel, 21,500 lbs.
Model 330— 80 hp diesel, 20,500 lbs.
Model 220— 60 hp diesel, 14,865 lbs.

TraveLoader — high-speed, heavy-duty, self-propelled, belt-type loader for all loose materials. 55 hp gasoline or 60 hp diesel engine. Wt. 16,800 lbs.

Tournapull—Trademark Reg. U.S. Pat. Off. AG-26-B-5J

LeTourneau-WESTINGHOUSE Company
Peoria, Illinois
A Subsidiary of Westinghouse Air Brake Company

For more facts, use Reader-Reply Card opposite page 18 and circle No. 276

outside the United States, and therefore exempt from income taxes here, even though the employee paid no tax in Ethiopia?

THE ANSWER: Yes. (Krichbaum v. United States, 138 Fed. Supp. 515, decided by the United States District Court, Eastern District of Tennessee.)

Corporate signatures

THE PROBLEM: *A bank check was signed "Ackerman Construction Co., by Oliver P. Ackerman." On its face did this check show personal liability of Ackerman?*

THE ANSWER: No. (Harris v. Ackerman, 76 S. E. 2d 132, decided by the Georgia Court of Appeals, Division No. 1.)

The court intimates that in a suit on a check so signed, the check may be regarded as an individual obligation if and when facts are proved showing such intent.

Highway contractor was liable to abutter

THE PROBLEM: *A state road-widening contract required the contractor to move private buildings upon adjacent land. Did completion of the contract and approval of the work bar the owners of the buildings from suing the contractor for damages to the buildings due to negligent moving?*

THE ANSWER: No. (Buc Ton Construction Co. v. Carlson, 280 S. W. 2d 408, decided by the Arkansas Supreme Court.)

The court referred to a decision by the Massachusetts Supreme Judicial Court to the effect that a contractor cannot avoid liability for negligent injury to a third person's property merely because it was done in the performance of a contract to which the latter was not a party.

Contractor held liable for operators negligence

THE PROBLEM: *A subcontractor's bulldozer operator on a land-clearing job backed up the machine, knowing that the general contractor had been working nearby. He backed the bulldozer into a man and fatally injured him. Could a jury find that the subcontractor was liable in damages?*

THE ANSWER: Yes. (Zanko v. Semmel, 108 Atl. 2d 700, decided by the Pennsylvania Supreme Court.)

The court said that the evidence indicated that the operator could have seen the man had he turned to look before backing up and that if he could not see what was behind him, he had no right to back up without first checking to see if the way was clear.

Negligently placed torch injures small child

THE PROBLEM: *A four-year-old child was burned by a lighted highway torch that a sewer contractor had placed within six feet of the end of the sidewalk leading from the child's home. Were the child and its father entitled to damages on a theory that the torch was placed too close to the walk?*

THE ANSWER: Yes. (Cipollone v. D'Alessandro-Crognale, Inc., 131 N. E. 2d 754, decided by the Massachusetts Supreme Judicial Court.)

One decisive and disputed question was whether the flame was so large that the danger of coming close to it should have been obvious to the child. The court said that there was evidence that justified the jury in finding that the danger was not obvious.

Oral promise to pay is upheld by court

THE PROBLEM: *In Arkansas, as in other states, a guarantee of payment of a third person's debt is not binding on the guarantor unless the agreement is written and signed. But this rule of law does not apply where work or materials are furnished to one person on the basis of another person's promise to pay because the promisor becomes the original debtor and not a guarantor. If the president of a corporation orally promised a contractor that he would pay for work to be performed for the insolvent corporation, could he be held personally liable?*

THE ANSWER: Yes. (Thompson v. Phillips, 284 S. W. 2d 842, decided by the Arkansas Supreme Court.)

Defamation of contractors

THE PROBLEM: *A contractor sued for damages, alleging that one of several defendants had fasely told a bank, officers of a bonding company, and others that he had defaulted on a certain construction job and that his work was improperly and inexpertly done. The contractor further alleged that his business and business reputation were damaged to the extent of $100,000 by the accusations. Did the contractor thereby state valid ground for suit, assuming that he could prove the statements to be false.*

THE ANSWER: Yes. (Mundy v. Gentilly Oaks, Inc., 78 So. 2d 530, decided by the Louisiana Supreme Court.)

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With a steam cleaning capacity of 180 gallons an hour, and optional 480 gallons flushing and rinsing capacity, New Series "1800" Hypressure JENNY is without question the greatest time and money-saving shop tool you, as an Implement Dealer, can own.

Powered to operate two cleaning guns simultaneously, Series "1800" will increase your profit on every job by cleaning equipment for repair or repainting twice as fast as the average steam cleaner. With dual guns, two entirely different cleaning jobs can be done at the same time.

You can take Hypressure JENNY right to the farm and earn additional income from cleaning and disinfecting poultry houses, stock pens, dairy barns, and milking equipment, on a contract basis.

For complete information on how to put New Series "1800" Hypressure JENNY Steam Cleaner to work saving and earn for you . . .

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No obligation.

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Keystone No. 29 cartridged grease is applied to the drum gear of a crane. Use of the special lubricant is said to give better results while substantially cutting lubrication frequency.

Special lubricant for use on open gears

■ A specially-compounded lubricant for servicing open gears that are subjected to severe conditions of pressure, dust, and high temperature is marketed by the Keystone Lubricating Co. Known as Keystone No. 29 cartridged grease, it is recommended for open gears on such rigs as cranes, shovels, dozers, trucks, cement mixers, and draglines.

The lubricant is available in three densities, is highly adhesive, resists acids and alkalies, and has excellent moisture-repellent characteristics, the manufacturer states. Depending on the density, the lubricant has an operating range of from minus 20 to 400 degrees F.

The grease is applied with a gun applicator, and may be applied even while the gears are in motion. It is reported to cut lubrication frequency substantially.

For further information write to the Keystone Lubricating Co., 3100 N. 21st St., Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 151.

Tractor-shovel

■ The Model HO Payloader with 2¼-cubic-yard capacity is described in a catalog from The Frank G. Hough Co. Features of the unit detailed are the power-shift transmission and torque-converter drive. Complete specifications are given, and data is included on standard equipment and accessories.

To obtain Form No. 302 write to The Frank G. Hough Co., 822 Seventh Ave., Libertyville, Ill., or use the Request Card at page 18. Circle No. 146.

Masonry saw

■ The Cardinal heavy-duty masonry saw is detailed in a folder. Some of the features of the unit are the 2-hp continuous-duty motor, micrometric head-height and head-angle adjustment, and the quick-voltage changeover. A table lists and describes component parts of the unit.

To obtain the folder write to Cardinal Engineering Corp., 144 Burnside St., Philadelphia 27, Pa., or use the Request Card at page 18. Circle No. 48.

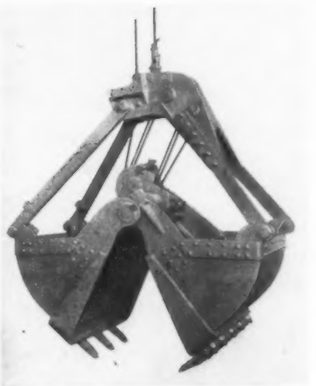
Clamshell models expand bucket line

■ Two new groups have been added to the Erie line of clamshell buckets offered by the Erie Strayer Construction Co. The new models include ⅜ to 4-yard light rehandlers and ⅜ to 2-yard extra-heavy-duty hard diggers.

Through the use of equalizer bar arrangements the new units, like others in the Erie line, can be adapted to 3 or 4-line application.

The addition of these new buckets brings to six the number of two-line types offered by Erie Strayer. Standard rehandlers, barge-type wide rehandlers, general purpose buckets and heavy-duty units are also offered.

For further information write to



the Erie Strayer Construction Co., P. O. Box 1031, Erie, Pa., or use the Request Card at page 18. Circle No. 131.

Service-score stickers

■ Wire-rope service records that resemble the oil change stickers for automobiles are available from the Leschen Wire Rope Division of H. K. Porter Co., Inc. Every sticker has a pressure-sensitive adhesive that is said to permit easy removal. Separate stickers are used for each line on the machine. The operator fills in such data as equipment, make, line, rope length and diameter, construction, brand, reel number, and date installed.

To obtain a starting supply of stickers write to Leschen Wire Rope Division, H. K. Porter Co., Inc., 2727 Hamilton St., St. Louis 12, Mo., or use the Request Card at page 18. Circle No. 47.

This cab lets you TAKE IT EASY on tough jobs!

Modern features in new Chevrolet truck Flite-Ride cabs make your work easier and safer than ever before . . . give you the pleasure and prestige of style that equals many passenger cars!

Those numbers in the picture (right) point out features that make business almost a *pleasure* when you work behind the wheel of a modern Chevrolet Task-Force truck! Here are some of the reasons why hauling in a Chevy is *easy on you:*

❶ *Concealed Safety Steps*—located *inside* the doors—stay clear of snow, mud, and ice, give you firmer, safer footing. ❷ *Spacious leg room* helps keep you comfortable all day long, brings you home fresher and more relaxed. ❸ *Nu-Flex seat* design means *comfortable* hauling! Jack-stringer springs give ideal body support; seat back adjusts easily. ❹ *High-Level ventilation system* keeps the cab interior clean, cool, comfortable. Intake is at the bottom of the windshield—away from road heat and dust. ❺ *No-Glare instrument panel*, with handsome two-tone finish, puts instruments and controls within easy sight and reach. ❻ *Panoramic windshield* provides a full 1000 square inches of forward viewing area to make driving safer, easier. ❼ *Full-View rear window** adds to safe, convenient viewing as well as truck style.

And you'll find bright, stylish interior appointments that add to your sense of pleasure on the job. If your work calls for long hours on the road, you'll enjoy life more in a Flite-Ride cab! Check one over for yourself at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

These fleet, nimble light-duty Chevies help you get more done more easily!

Staying ahead of tight hauling schedules is a breeze in these modern trucks! Efficient short-stroke V8's* get you where you're going faster—and with good economy. Ball-Gear steering saves you time and work in traffic. And for the ultimate in easy going, there are power brakes,* power steering,* *Hydra-Matic* transmission!*

**Optional at extra cost.*

CHEVROLET

NEW CHEVROLET TASK·FORCE TRUCKS

Anything less is an old-fashioned truck!

For more facts, use Reader-Reply Card opposite page 18 and circle No. 278

A wellpoint system, rather than cofferdams and marine units, allows piers to be built in the dry. The area, formerly consisting of water and a few islands, is enclosed by dikes of dredged sand, the one at left serving as a roadway.

Wellpoints in sand dike dewater bridge-pier site

Wet or dry? That was the choice, and McCarthy Improvement Co. decided to do it in the dry. However, there was much more to the job than simply deciding to do it the dry way.

The project was the construction of 14 piers and an abutment comprising the substructures of the east approach to the new bridge being built across the Mississippi River at Clinton, Iowa. This approach crosses 1,500 feet of bottomland from the main river channel to high ground on the Illinois shore. The area consists of a series of islands and waterways roughly paralleling the main channel, with the wet areas ranging from barely wet ground to open water 18 feet deep.

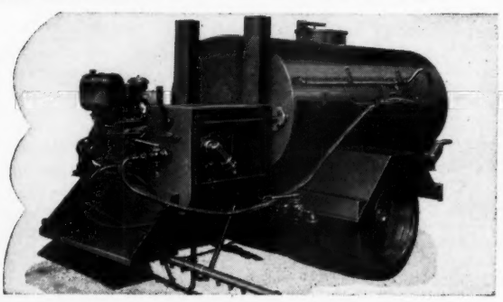
At first glance, this east-approach area looked like a good location for a marine operation. There was substantially more water than land, and a relatively small amount of dredging would have opened the inaccessible areas to floating equipment. The 9-foot upper Mississippi waterway meant that all materials could be barged to the job. It looked like a natural for floating equipment.

However, instead of dredging a channel, building cofferdams, and working with marine equipment, McCarthy Improvement Co., Davenport, Iowa, built a dike, dredged up piles of sand at pier locations, installed wellpoint systems, and built the piers with land-based equipment. While the method involved some risks, particularly in the event of high water, it proved to be both economical and time-saving.

Substructures for the west approach and the two main tower piers were also included in the general substructure contract. Since the west approach is situated on high land in the city of Clinton, there was no problem as to the construction. The substructure contract, awarded to McCarthy Improvement Co., was one of seven initial contracts awarded by the City of Clinton Bridge Commission for the construction of the new toll bridge.

The six other contracts were for earthwork, bridge superstructure, approach roadway paving, administration buildings and toll houses, electrical wiring and equipment, and Illinois-approach overpasses. Of the $4.5 million total construction cost, the substructure contract amounts to $1,222,204, and the superstructure contract is for $2,684,848. The project

STANDARD STEEL "S-J"
Maintenance Distributor



DOES THE WORK OF BIG EQUIPMENT ON SECONDARY JOBS FOR LOWER COST

FULL CIRCULATING SPRAY BAR UP TO 10 FOOT LENGTH SEALS COATS AS PERFECTLY AS A FULL FLEDGED HEAVY DUTY PRESSURE DISTRIBUTOR

Standard Steel S-J Maintenance Distributor is available in either trailer or truck mounted type . . . the trailer unit can be quickly converted to truck mounting by removing tongue and running gear. A fuel pump throw out clutch is standard equipment on all models. The clutch disconnects the pump from engine when burners are not being used. The pump and piping provide the following features: (1) Pumps from tank through spray bar (2) Pumps from tank to hand spray (3) Pumps from tank to outside source (4) Pumps from outside source to another outside source (5) Pumps from outside source into tank. This versatility is a very great help in speeding operation of the S-J. Entire pump and piping as well as spray bar can be easily cleaned through its special suck back feature. Write for complete details on the 1955 Model S-J.

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ASPHALT DISTRIBUTORS . . . BURNERS . . . POWER AND TRACTION DRIVEN CONSTRUCTION BROOMS . . . MAINTENANCE DISTRIBUTORS . . . TAR KETTLES . . . AGGREGATE SPREADERS STREET FLUSHERS . . PIPE LINE EQUIPMENT . . . SUPPLY TANKS SHELVING HARDWARE . . . AND AGRICULTURAL EQUIPMENT

Built to the Highest Standard

Standard Steel Works, Inc. NORTH KANSAS CITY, MO. SJ8

For more facts, use Reader-Reply Card opposite page 18 and circle No. 279

troublesome handling job made inexpensive with a

BRADEN WINCH

One man and a BRADEN Winch can do many jobs that might ordinarily require a crew of workers. The handling work a BRADEN Winch can do is limited only by the imagination of the operator.

BRADEN models are made for handling any load up to 100,000 pounds, with safety. So to save time and money, specify a BRADEN Winch for any handling job.

write for complete catalog

BRADEN WINCH COMPANY
P. O. Box 547, Broken Arrow, Oklahoma

BRADEN Winches

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Some of the piers for the east approach are almost complete. The cement barge is is at left along with the Blaw-Knox cement bin. A Blaw-Knox aggregate bin and a Koehring 701 crane are at right.

In erecting girders for the west-approach structure, Industrial Construction Co. uses a Manitowoc 3000 crane with 90-foot boom and 25-foot jib. In the background are catwalks in place for the suspension spans.

C&E Staff Photo

was designed and supervised by Modjeski & Masters, Harrisburg, Pa.

Dredge sand dike

Providing an access road to all piers of the east approach was the first operation. A small 6-inch hydraulic dredge owned by Ferd J. Robers Co., Burlington, Wis., moved in and built a dike of river-bottom sand extending across the bottomland from the main channel of the river to the high ground at the east abutment. Located at the south, or downstream, edge of the line of pier footings, the dike was built up to approximately 6 feet above normal water level and was topped out to a 20-foot width to provide a roadway.

The dredge also built up sand ridges north of or on the upstream side of the main dike to form pockets outlining the location of each pier footing. Each pier location was completely enclosed by the main dike on the south side and by the smaller sand dikes which formed the other three sides of the pockets. When completed, the dikes and pockets contained about 60,000 cubic yards of material, and measured 1,500 feet long by as much

(*Continued on next page*)

Gorman-Rupp Contractors' Pump

KEEPS PENNA. DAM JOB MOVING

Photo by Jerry Pratt, Constructioneer

Near Spring Grove, Pennsylvania, a 1,100,000,000-gallon earth dam is being constructed for P. H. Glatfelter Co., producers of paper, by Central Pennsylvania Quarry, Stripping and Construction Co. Seepage in the spill-basin is quickly removed by a Gorman-Rupp 90M Pump, Model 3602, letting work proceed on the removal of solid rock. The pump stands about 20 feet above water level and is discharging over the rise, as shown in the upper right of the picture. The 500-ft. spillway chute handles overflow from the 2½-sq.-mile dam.

Keep *your* job moving with a Gorman-Rupp Contractors' Pump. It is guaranteed in plain language.

Gorman-Rupp PUMPS

THE GORMAN-RUPP COMPANY

305 Bowman Street • Mansfield, Ohio

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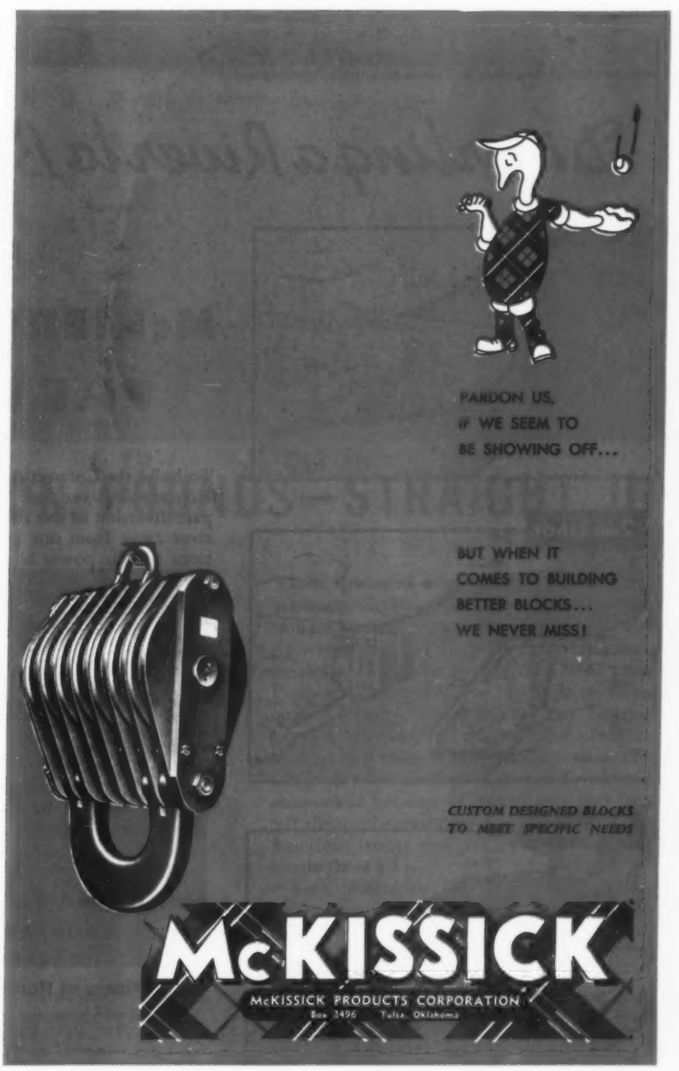

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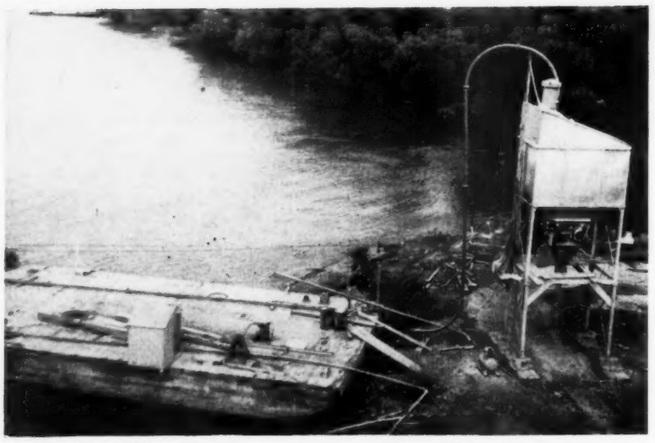


A Fuller Kinyon vacuum system, working on the Illinois side, unloads cement from a barge and transports it through a pipe to the Blaw-Knox plant on shore.
C&E Staff Photo

(Continued from preceding page)

as 180 feet in width at the pockets.

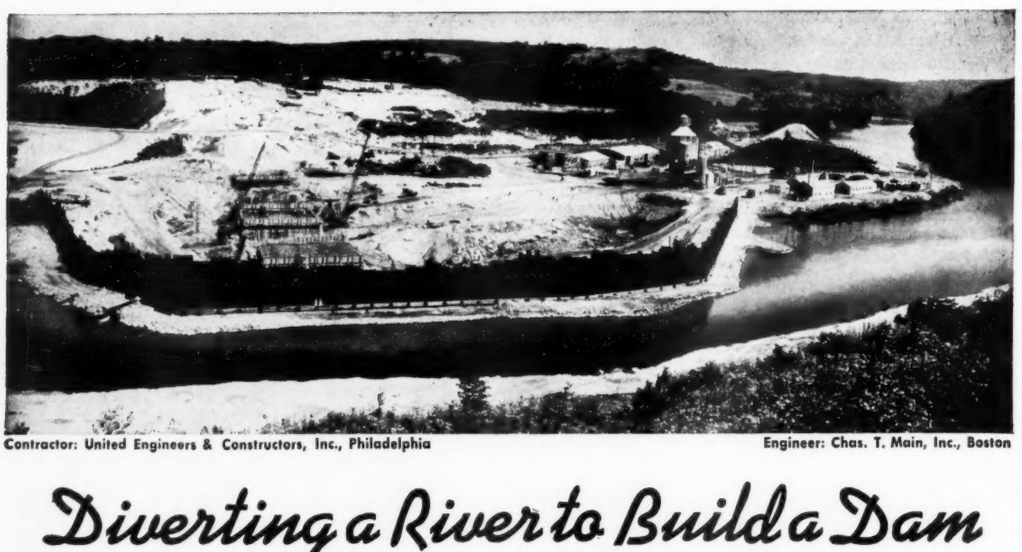
Wellpoints were then installed at 3 to 4-foot centers around each pier location. Resting on sand dikes just a few feet above water level, the headers for the first stage of wellpoints were laid well back from the actual pier locations.

A 12-inch main header was laid along the north side of the main dike, and points along the south sides of the piers were attached to this header. Eight-inch headers were strung around the other three sides of the piers and connected to the 12-inch pipe; two 10-inch wellpoint pumps, one gasoline-powered and the other diesel-powered, pumped from the 12-inch header.

This arrangement of the wellpoint systems provided such flexibility that a pier location could be pumped or not by simply opening or closing valves. Moving the two pumps from place to place was not necessary, and as many as five of the pier locations were pumped at one time.

Some of the excavations, going as deep as 23 feet, required second stages of wellpoints, which were installed on the side of the bank after the excavation had been carried part way down. Eight-inch headers were used in all four sides of the second-stage sets, and in most cases, the second stages were equipped with separate pumps independent of the first-stage system.

The wellpoint system was installed and operated by the general contractor's crews.



Contractor: United Engineers & Constructors, Inc., Philadelphia — Engineer: Chas. T. Main, Inc., Boston

Excavate by clamshell

As the water table at the pier locations was lowered, a Link-Belt Speeder crane with a Johnson 1¾-yard clamshell bucket carried the excavation down to footing grade. The banks were sloped so that the sand would stand, and no cofferdams or other sheeting was required. Excavation for the group of piers averaged about 15 feet deep, and the maximum was 23 feet.

Material removed from the excavation was used to build up the area between the piers, so that men and equipment could work from it by the time excavations were complete. This provided good access on three sides of the piers.

Piling was furnished and driven under a subcontract to Raymond Concrete Pile Co., New York, N. Y. The step-taper pile shells were driven to bearing in the sand at an average depth of about 35 feet. Raymond used a P&H Model 1055LC crane to handle the leads and the Raymond driver. Steam was supplied by a separate upright boiler. Most of the pier footings required about 30 piles; the maximum was 39. When the pile shells were driven, they were filled with concrete supplied by ready-mix trucks and chuted or bucketed into the piles.

Forming of the footings was simplified by the similarity of the piers, the eleven with identical footings being built with just two sets of forms. The piers were also similar enough to permit many re-uses of the forms, and the top struts and the tops of the columns of the eleven piers were also similar. From the strut, the columns tapered uniformly, so that by forming the highest pier first, the forms could be re-used by simply shortening them from the bottom.

Most of these pier forms were built with ¾-inch plywood facing on 2×8 studs backed by double 10-inch steel channel wales. These heavy form sections were handled by one of the cranes. Below-ground portions of the piers on the west approach were formed with Universal form panels, as was the abutment at the west end.

Concrete materials by barge

The 10,000 cubic yards of concrete in the substructure on the east side

Diverting a River to Build a Dam with

McKIERNAN-TERRY PILE HAMMERS

To build the Connecticut Light & Power Co. dam across the Housatonic River near Sandy Hook, Conn., required a two-part diversion of the river. First, a 1,000-ft dike diverted the river away from one bank to permit building the foundations for the power house and the part of the dam on that side. Then, a similar dike was built at the other bank to permit building the dam foundations on that side of the river.

Each of the dikes was formed by about 800 sixteen-inch steel sheets, and the sheets were driven by a McKiernan-Terry 9B3 Double-Acting Pile Hammer. At a later stage of the project, a vehicular bridge was built over the 1900-acre reservoir back of the dam. A McKiernan-Terry Pile Hammer was also used to drive pier cofferdam steel sheet piling for this bridge.

In innumerable foundation projects, McKiernan-Terry equipment is selected by the contractor to assure dependable, speedy and economical pile driving. Write for bulletin.

McKIERNAN-TERRY CORPORATION
MANUFACTURING ENGINEERS
82 Richards Ave., Dover, N. J.
Plants at Harrison, N. J. and Dover, N. J.

MK 375

For more facts, use Reader-Reply Card opposite page 18 and circle No. 283

of the main channel was handled by a pair of Rex 27-E paving mixers, moving from pier to pier along the dike mixing the concrete right at the location where it was to be placed.

Aggregate and cement, delivered by barge to the batch plant on an island adjacent to the main channel, were unloaded and stockpiled by a Koehring Model 701 crane. The island is the westerly terminal of the dike that joined the piers.

Sand was produced by McKenzie Sand & Gravel Co., Galesburg, Ill., and coarse aggregate came from Linwood Stone Products Co., Inc., Linwood, Iowa. Cement, barged up the river from a plant at Davenport, was transferred to a Blaw-Knox bin on the island by Fuller Kinyon air-operated pipeline equipment mounted on a long barge moored securely to the island. This barge served as a dock to which the cement barges were tied while they were being unloaded.

Aggregates were weighed out into batch trucks through two Blaw-Knox bins, fed from the stockpiles by the Koehring 701 crane with a clamshell bucket. The batch trucks then picked up cement and drove down the dike to the point where the mixer was operating.

The mixer was usually blocked up on timbers so it could discharge directly into the Blaw-Knox 1-yard concrete bucket which was hoisted to the forms by the Link-Belt Speeder crane.

McCarthy started work on the substructures in August, 1954, taking advantage of the low-water period in the fall to reduce the possibility of water overrunning the dike while work was in progress. Working two 8-hour shifts, the crews placed 10,000 cubic yards of concrete before the end of December of that year. A pair of Caterpillar 17000 diesel-generator sets provided power for lights for the crews working during the dark hours of the fall days.

With this good start on the east approach, McCarthy was able to complete the entire substructure contract early last fall, eight months ahead of schedule. The contractor also made an unusual use of mobile-radio equipment: although only one of the four two-way sets was actually installed in a mobile unit—the tug carrying men and supplies back and forth across the river. The base station for the G. E. system was set up in the job office in Clinton, and the other two units were located in the carpenter shop and labor headquarters on the east side of the river. With the work isolated in the river bottom, the radio saved many hours by providing direct communication between the several offices and the boat.

On the Iowa side of the river, concrete was supplied by Block Ready Mix Co., Clinton, and delivered to the job in transit mixers. Footings and other low pours were chuted directly from the trucks, and higher pours were carried to the forms in a Johnson 1-yard bucket handled by a Koehring 605 crane.

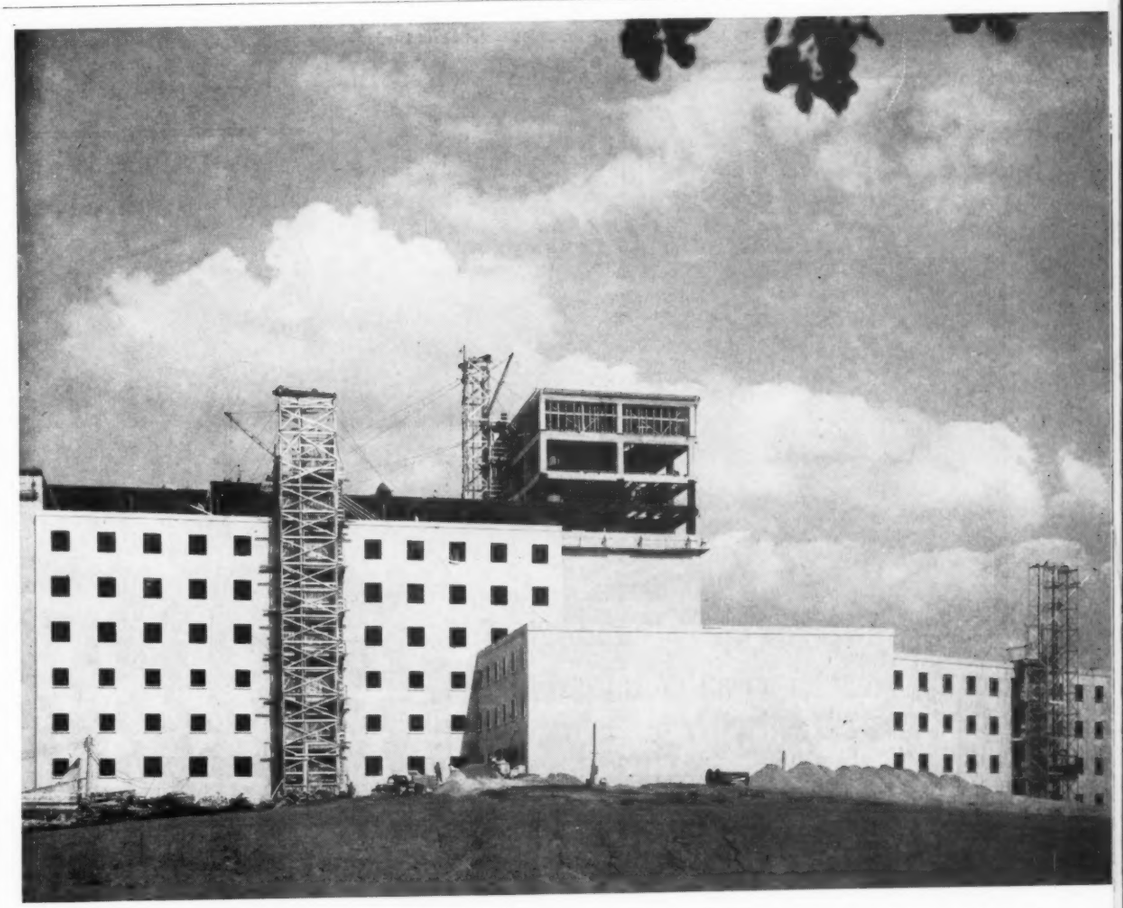
Of the 15 piers on the Iowa side, four were founded on piling and the other 11, including the cable anchorage, were founded on solid rock. Rock excavation for the 11 piers was done with Thor paving breakers and jackhammers powered by Ingersoll-Rand and Chicago Pneumatic air compressors.

Cofferdam for tower pier

A deep cofferdam was required for the construction of the west tower pier, located just at the west edge of the main river channel. Three sets of frames, made up of 36-inch wide-flange beams with 8 and 10-inch wide-flange struts and arranged to leave 10×12-foot clear bays, were assembled for the 25×80-foot coffer-

(*Continued on next page*)

With the Raymond step-taper piles driven and cut off for the pier footings, workmen prepare to pour concrete. The excavation is kept dry by a two-stage wellpoint system installed on 3 to 4-foot centers around each pier.



100 MILLION POUNDS—STRAIGHT UP!

100,000,000 POUNDS of construction material for the Prudential North Central Office were moved by American Hoists on the job!

Three thousand tons of steel, 20,000 yards of concrete, 42,000 cubic feet of stone—a hundred million pounds! That's the material handled by American General Purpose Hoists during construction of the North Central Home Office of Prudential Insurance. For top flight performance on any hoisting job—handling any material to any height, American Hoists offer precise, safe load control through the smooth action of time tested clutches and brakes. Power flow is smooth, economical because of American's anti-friction, self aligning bearings and machined gears. Rugged American Hoists give you trouble-free service for hundreds of jobs.

Your American Distributor will show you hoists beginning with capacities of 3000 pounds single line pull and up!

AMERICAN HOIST
and Derrick Company
St. Paul 1, Minnesota

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(Continued from preceding page)

dam. The frame was set in place on temporary piling. The MZ-38 sheeting sections which made up the shell of the cofferdam were then driven into the rock approximately 45 feet below the water by a McKiernan-Terry 9-B-3 hammer powered by air from a Chicago Pneumatic 600-cfm compressor. As the material inside the cofferdam was excavated, the thin frame was lowered until the lower frame was 8 feet above the rock and the other two frames were spaced at 9 and 15-foot intervals.

A Jaeger 6-inch gasoline-powered pump and a Carver 8-inch pump powered by a 50-hp electric motor unwatered the cofferdam and held the water down while the excavation was being completed and the pier constructed. The pier, located close enough to the bank so that the equipment could operate from shore on an improvised ramp, required no marine equipment or diver. No tremie seal was placed.

One suspension span

The superstructure of the bridge, consisting of a series of deck girder spans on both approaches from the abutments to the tower piers, has a single suspension span between the two tower piers over the main river channel. The suspension cables on the back spans have no hangers and do not support the bridge deck.

The contract for the superstructure went to Allied Structural Steel Co., Clinton; the steel towers and suspension cables were sublet to American Bridge Division of U. S. Steel Co.; and erection of the approach spans was done by Industrial Construction Co., Minneapolis, Minn.

Industrial used an American stiff-leg derrick mounted on a barge for erecting steel for the east-approach spans. The steam-powered rig, with a 90-foot boom and 25-foot jib, was mounted on a 50 × 70-foot barge which drew about 18 inches of water when it was light. This rig raised the steel for the spans adjacent to the river, but was unable to get into the slough at the east end because of shallow water.

When the water level suddenly rose about two feet, Industrial seized the opportunity to rush the rig into the slough. Working from dawn to dusk, the crew raised 300 tons of steel for this 500-foot section of the bridge in a week and got the rig back out to deep water before it was stranded.

On the west-approach spans, the contractor raised the steel with a Manitowoc 3000 crane fitted with a 90-foot boom and a 20-foot jib. This rig raised the lighter steel unassisted, but on one span of 157 feet, it teamed with a Brownhoist locomotive crane to set the 8-foot-deep girders. These continuous girders had to be spliced in this span. A 79-foot section was set first, and the locomotive crane held its free end while the Manitowoc set a 79-foot girder which cantilevered out into the next span. While the two cranes held the girders, the splice was made.

The concrete deck for the east ap-

SPEED UP
THESE TOUGH JOBS

Ingersoll-Rand GR-125 Gyro-Flo Compressor, Continental-powered, operating Mall chain saw cutting 12" x 12" timber to repair pier. Equipment in use on an eastern railroad.

WITH
CONTINENTAL RED SEAL POWER

Year after year, ever since 1902, Continental engines have been proving their dependability in a steadily-lengthening list of special-purpose machines. Today, no matter what the exact requirement of the job, there's a Red Seal model—gasoline, Diesel, or LPG—engineered and built to meet it down to the last detail—a model with the proper performance characteristics, profile, shape and weight. In the industrial line there are models at closely-spaced levels—from 14 to 240 horsepower. You find them on an almost endless number of operations, speeding the tough jobs and delivering their full work quota, day in and day out, with a minimum of time out for adjustment or repairs.

SERVICE FACILITIES AND GENUINE RED SEAL PARTS AVAILABLE EVERYWHERE

CONTINENTAL MOTORS — Powerful as the Nation — AMERICA'S STANDARD

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6218 CEDAR SPRINGS ROAD, DALLAS 9 TEXAS • 1252 OAKLEIGH DRIVE, EAST POINT (ATLANTA) GA.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 285

The EAGLE Water Scalping-Classifying Tank Gives You Classification You Wouldn't Think Possible!

THE EAGLE Complete Washing-Classifying-Dehydrating Section at the eastern aggregate plant shown, has a 24′ tank equipped with 9 automatic, power-operated bleeder valves. Pit run sand is segregated into 9 distinct classifications, each flowing from one of the 9 valves.

"Splitter" gates below each valve, in conjunction with the Multi-Cell Collecting-Blending Flume below the tank, permit directing of any percentage from each valve to any of the three Eagle Screw Washer-Classifier-Dehydrators. Or, any percentage from any valve can be wasted. Complete flexibility to produce any gradation—or variety of gradations—material to meet specifications.

You can increase the efficiency of your present Eagle Fine Material Washer or Washers—or other make—by installing an Eagle Water Scalping-Classifying Tank—whether yours is a dry pit operation, as shown, or a pumping operation. **Send for the facts in Catalog 55.**

The EAGLE LINE

FINE MATERIAL WASHERS

COARSE MATERIAL WASHERS

LOG WASHERS

WATER SCALPING—CLASSIFYING TANKS.

"SWINTEK" DREDGE LADDERS

COMPLETE DREDGES

BREAKER BALLS & PILE HAMMERS.

Experience, Progress, Service Since 1872

EAGLE IRON WORKS
159 HOLCOMB AVE., DES MOINES, IOWA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 286

A Link-Belt Speeder crane with a 1-yard bucket places concrete in one of the pier shafts. The concrete is mixed at the site in a Rex 27-E paver (lower left,) which is blocked up on timbers so that it can discharge directly into the bucket.

proach was sublet to Gould Construction Co., Davenport, Iowa, and Industrial Construction Co. placed the concrete deck for the west-approach structure.

Raising of the main-span steel started in October and continued into the early winter as this was the closed season for navigation on the upper Mississippi. The bridge was scheduled to be complete and ready for traffic last month.

Personnel

Supervisor for McCarthy Improvement Co. on the substructure contract was project manager E. K. Leins. He was assisted by chief engineer D. J. McKirchy and general superintendent James Wren. Superintendent for Industrial Construction Co. on the superstructure was John W. Lee.

Modjeski & Masters, the consulting engineer, was represented on the job by resident engineer H. E. Eckhoff. Chairman of the City of Clinton Bridge Commission is Mark Morris.

THE END

Line of trailers

■ A catalog presents the complete line of trailers manufactured by Rogers Bros. Corp. Trailers described include the I-beam, tilt-top, "H", and "D" types. A two-page spread of each trailer preceeds the specifications, cutaway views, job photos, and brief description of the particular trailer.

To obtain Catalog 156 write to Rogers Bros. Corp., 108 Orchard St., Albion, Pa., or use the Request Card at page 18. Circle No. 88.

Pipe end sections

■ The outstanding features of Armco end sections for improving culverts are briefly detailed in a bulletin. Maintenance, installation, and appearance of the sections are described. Sizes available range from an 18-inch span × 13-inch rise to a 72-inch span × 44-inch rise.

To obtain Bulletin ES-12255 write to Armco Drainage & Metal Products, Inc., 703 Curtis St., Middletown, Ohio, or use the Request Card at page 18. Circle No. 64.

Excavator's power unit also furnishes air

■ Bucyrus-Erie's Model H-3 Hydrocrane-Hydrohoe is now being offered with a dual-purpose engine which serves not only as the machine's power unit but also furnishes air for operating jack hammers, tampers, and similar tools.

The Chrysler 6-cycle gasoline engine, offered optionally in place of the machine's regular power unit, uses three of the six cylinders to develop power, while the other three serve as a compressor delivering air at the rate of 120 cfm at 100 psi.

The compressor is equipped with an after cooler which reduces the temperature of the air, resulting in longer life for operating tools. An air receiver tank with hose reel is included in the package.

For further information write to the Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 31.

Pipe-cutting machines

■ Various models of Beaver Pipe Tools' Speed-Cut machines for dry or wet-cutting of pipe are detailed in a folder. Capacities of the machines range from 4 to 12-inch pipe. There is a picture of each model, together with a brief description and specifications.

To obtain Form AB-355 write to Beaver Pipe Tools, Inc., 325 Dana St. N. E., Warren, Ohio, or use the Request Card at page 18. Circle No. 66.

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Rugged work requires rugged equipment and that's exactly what you get with Wagner "Torture Tested" tractor equipment. Every stress point is *doubly* protected. Heavy-duty construction keeps maintenance costs way down and productive time way up. Wagner equipment stays on the job day in and day out working for you and more profits. No wonder Wagner tractor equipment is recognized as so far superior it has become No. 1 in America by a wide, wide margin. See all the rugged features of Wagner tractor equipment and the numerous attachments that can make a tractor your most versatile piece of equipment. Get proven dependability no matter how tough the job. Get Wagner tractor equipment today.

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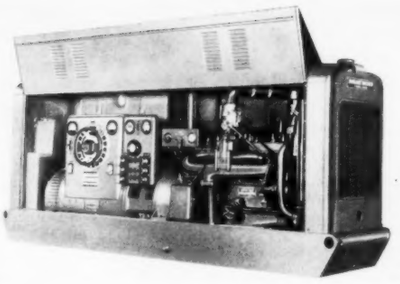
For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 287

Welder has 6 or 12-kw ac auxiliary power

■ A new gasoline-engine-driven dc arc welder which provides 6 or 12-kw ac auxiliary power is announced by the Hobart Bros. Co. The welder is available in 300 and 400-amp sizes. Full capacity can be used to provide 110 or 220-volt power service, or the capacity can be divided between the two.

The welding control panel is equipped with a current range hand wheel, a volt-amp adjuster, and welding cable connecting studs. A welder ammeter and voltmeter are optional equipment. The auxiliary power control panel is equipped with a voltmeter, a frequency meter, a field rheostat, a de-energizing switch, and various studs and receptacles.



The Hobart gasoline-engine driven dc arc welder with 6 or 12-kw auxiliary power.

The welding generator and auxiliary power generator are driven by a single six-cylinder industrial engine. Constant speed is maintained by a flyball-type governor. An electric idling device permits changing of electrodes without slowing the engine.

For further information write to the Hobart Bros. Co., Hobart Square, Troy, Ohio, or use the Request Card that is bound in at page 18. Circle No. 152.

New alloy makes buckets lighter and stronger

■ A line of dragline buckets, with either solid or perforated baskets, has been announced by the Bucyrus-Erie Co. Three types are available in a range of sizes: the BL for light-duty digging in materials with resistance to penetration similar to that of loose gravel or clay; the BM for medium-duty digging in bulky material with penetration simliar to light shale or cemented gravel; and the BM for heavy-duty digging conditions.

According to the manufacturer, the new dragline buckets are strong yet far lighter than those previously offered. They are made of Becoloy, a steel alloy developed by Bucyrus-Erie.

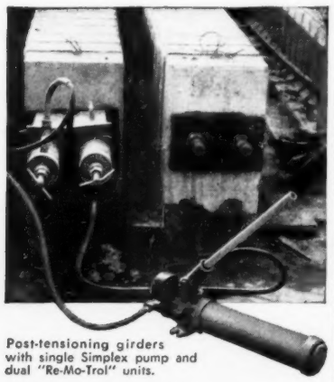
Among the features of the new bucket line are: high arch of bucket, which provides wide opening and ample clearance for loading and dumping; "slicing action" lip—a thin Becoloy-cast steel section shaped for effective penetration; solid or two-part Becoloy teeth; and a free-rolling dump block equipped with sealed tapered roller bearings.

For further information write to the Bucyrus-Erie Co., South Milwaukee, Wis., or use the Request Card at page 18. Circle No. 126.

Brick and gunned concrete

■ Combination brick and gunite walls for lift-slab construction are covered in a bulletin from the Gunite Contractors Association. Progress photos of a typical job, plus detailed captions, show this type of construction. The bulletin gives a general discussion of the brick-gunite type of construction.

To obtain Bulletin No. 127 write to the Gunite Contractors Association, 714 W. Olympic Blvd., Los Angeles 15, Calif., or use the Request Card that is bound in at page 18 of this issue. Circle No. 80.



Post-tensioning girders with single Simplex pump and dual "Re-Mo-Trol" units.

Simplex Hydraulic Pullers Provide Greater Efficiency in Concrete Prestressing Operations

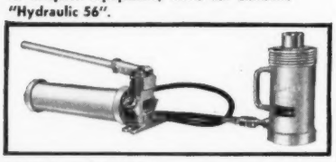
Construction Men Acclaim Ease and Safety of Simplex Methods

Concrete prestressing becomes a quick easy task with Simplex hydraulic equipment. Rods, wires and cables can be tensioned without torque, "off-center" pressures or complicated back-up devices because of the "center-hole" pulling feature of Simplex units. This accounts for a 75% increase in ease and efficiency.

The "Re-Mo-Trol" unit consists of a "center-hole" pulling ram connected to a hand, air, electric or gasoline powered hydraulic pump. The combination provides uniform stressing with maximum safety and speed. With the ram in place, the pump can be operated safely from any nearby location.

"Re-Mo-Trol" units are ideally suited for either job site or permanent prestressing bed use. Standard units are available from 10 to 100 ton capacities. They can be used directly on wires, rods or cables for high pressure tensioning, or for pushing or pulling against holding brackets in multiple bed stressing operations.

For detailed data on selection and application of Simplex equipment, write for Bulletin: "Hydraulic 56".



SIMPLEX "RE-MO-TROL" — Remote-Controlled Unit has ram connected to hydraulic pump by high pressure hose for safe, convenient use in tight spots and dangerous locations. The "JENNY" is a self-contained center-hole hydraulic puller which also serves as a press or heavy duty jack. It is available in capacities from 30 to 100 tons.

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For more facts, circle No. 288

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Dept. K1, 871 Edgerton St., St. Paul 1, Minn.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 289

Stays Sharp Longer!

Whether you use it on reinforced concrete or the hardest, toughest rock, the Vulcan Superkut Chisel stays sharp longer than any other pavement or rock breaking tool

Actually tends to resharpen itself while in use. Some of these tools have actually worn down to half their original length without need for re-sharpening.

The Superkut Chisel also provides a unique wedging action that breaks off big chunks fast. Reports from the field show that this tool is built for speed. It outperforms moil points by 10 to 1, is three times faster than conventional wedge or spread points.

If you want an all-purpose tool, this is it. The Superkut Chisel cuts through heavy mesh or reinforcing rods without fouling or jamming; it works as well on asphalt, brick, or cobblestones as on concrete and rock. For speed, economy, versatility, the Superkut Chisel can't be beat.

Vulcan Tools are sold by distributors throughout the United States and Canada

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Specialists in the Design and Production of Pneumatic Tool Accessories

For more facts, use Reader-Reply Card opposite page 18 and circle No. 290

The Hensley Model 2000-H ripper fits the D9 and other large tractors.

New heavy-duty ripper fits largest dozers

■ Development of a new heavy-duty ripper designed to fit D-9 tractors and others of comparable size and horsepower has been announced by the Hensley Equipment Co., Inc.

The chief feature of the Model 2000-H ripper, according to the company, is its outstanding wearing quality. Because of a specially designed wear collar, which provides added protection to the leading edge of the ripper shank, the Model 2000-H gives maximum wear over longer periods, thus reducing replacement costs. The new ripper is fully adjustable and interchangeable on the D8, D9, HD-19, HD-20, TD-24, and tractors with blade heights from 39 to 61 inches.

Other features include replaceable, reversible, self-sharpening wear boots; a positive locking and holding yoke; a simple cotter-pin rough adjustment arrangement, plus ball-and-socket fine adjustment; and a throat opening that cannot chip the cutting edge or break off hardfacing.

For further information write to the Hensley Equipment Co., Inc., 800 Peralta Ave., San Leandro, Calif., or use the Request Card at page 18. Circle No. 130.

Rust-preventing spray absorbs no dust, dirt

■ A rust-preventing spray for use on tools, instruments, nested metal parts, and machinery is manufactured by Eastern Aerosol Products. Known as Rust Chek, the new compound is packaged in a 12-ounce aerosol spray container.

According to the manufacturer, one can provides approximately 80 square feet of coverage in the form of a clear, dry, waxy film. Except in the case of precision instruments where critical tolerances must be observed, the film need not be removed when the protected item is removed from storage or tool crib and readied for use. The film is worked off in the using, and in some applications, such as on power saws, it serves as a lubricant.

In tool, mold, and other applications in which Rust Chek is designed to simplify the work of applying a preservative, the manufacturer reports it has advantages over oil or grease in that it does not absorb dust and dirt. Submersion tests in salt water and in other liquids simulating various atmospheric conditions indicate that the new product will provide complete and permanent protection during storage periods or in transit. The compound can also be used outdoors.

For further information write to Eastern Aerosol Products, Newfoundland, N. J., or use the Request Card at page 18. Circle No. 12.

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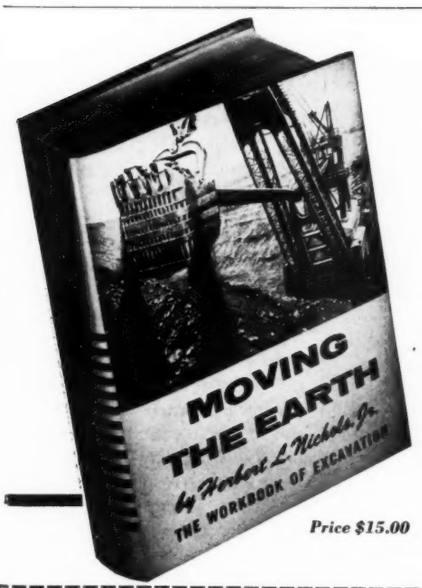

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NOW EQUIPPED with hydraulic controls and power steering, the new, improved Cleveland Formgrader will simplify your form setting and do a better job of it at less cost. One man in 6 hours can cut 6,480 feet of form trench, leaving it compacted and rolled—ready for instant setting of forms.

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After grading was completed, but before the base is placed, a system of surface drainage is installed. Here a Cleveland wheel trencher excavates for a 6-inch line of tile underdrain. *C&E Staff Photos*

Traffic keeps moving during tricky interchange paving

Curves, superelevations, varying lane widths complicate grading and paving work in half-mile-long cloverleaf

Laying 52,000 square yards of concrete pavement is not ordinarily considered a large highway-paving job since it represents less than four miles of standard 24-foot slab. But the work takes a different aspect when most of the paving is concentrated in a job less than a half mile long. When practically every foot of roadway is on either a horizontal or vertical curve, or both, and when heavy traffic must be maintained while work is in progress, the job becomes more complicated.

These were the conditions under which Gast Construction Co., Warsaw, Ind., paved a cloverleaf intersection of Routes U. S. 40 and Indiana 100, just east of Indianapolis. Curves, spirals, superelevations, or varying pavement widths were problems on almost every foot of the work Carrying the traffic from the two heavily traveled highways through the job at all times eliminated the necessity of a costly and confusing detour, but it caused many delays and inconveniences for the contractor.

The $585,000 Gast contract included shaping, seeding, sodding, and finishing the adjacent areas, in addition to grading and paving all roads in the intersection.

Grade-separation bridges had been constructed under a separate contract, and the 120,000 cubic yards of earthwork required to build the bridge approaches and shape the roadways was done by a subcontractor, Heavy Duty Construction Co., Inc., Indianapolis. Like the paving, the grading had to be done bit by bit without interrupting traffic on the highways. The grading contractor started work in October 1954, but had to shut down shortly after for the winter. It was almost April, 1955, before spring rains let up and the ground dried out enough to permit the operation to resume. By that time, the paving contractor was ready to start. From this point on, Heavy Duty had to struggle to have the grade ready before paving operations, and an unusual amount of rainfall served only to make its job harder.

For a substantial part of the earthwork, Heavy Duty used a spread of three International scrapers. An International TD-24 and a Caterpillar D8, both equipped with dozers, pushed the scrapers and helped spread the fill. Spread in 6 and 8-inch lifts, the fills were shaped by a Cater-

"They were blasting right outside the window but we never lost a teacup!"

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VAN CLEVE CHINA & GLASS CO.
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Photo shows nearness of Connecticut Turnpike blasting operations to the Van Cleve China & Glass shop.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 294

An International scraper picks up a load without the aid of a pusher. Most of the 120,000 cubic yards of excavation, required to shape the roadway and bridge approaches of the intersection, was moved in this way.

An auxiliary form carries the overhanging wheel of the Jaeger Lakewood finisher working on a narrow part of a 17-foot section. The finisher is set at the standard 24-foot width.

pillar No. 12 grader and compacted by Huber and Browning 10-ton 3-wheel rollers. Most of the material for the fills was obtained from excavations or borrow areas on the site.

An extensive system of underdrains was installed in addition to culverts and other facilities for surface drainage. Trenches for these tile drains were dug by a Cleveland wheel trencher owned by R. L. Hall. The trenching and tile laying had to be carefully coordinated with the grading so that they would be done after the grading had been completed but before the base had been placed.

Pavement on granular base

When the site had been brought to proper grade and alignment and thoroughly rolled, a 6-inch course of granular base material, hauled in by a fleet of dump trucks, was spread to uniform thickness by a Jersey spreader on an Allis-Chalmers HD-10 tractor. This material was compacted by a 10-ton steel-wheel roller.

Blaw-Knox 9-inch paving forms were then set for the 9-inch reinforced-concrete paving. An Allis-Chalmers HD-5 with Tracto-Shovel shaped the base to grade inside the forms ahead of the paver. Materials for the concrete were dry-batched from the Ready Mix Concrete Co. plant in Indianapolis, and hauled to the site in batch trucks.

Most of the concrete was mixed in a Rex 34-E dual-drum paver, although a Rex single-drum machine was on hand for some of the smaller pours. The paver deposited the mix on the roadway in front of a Jaeger Lakewood finisher which spread and finished the concrete. A Cleft-Plane joint installer followed on the forms. The rest of the finishing was done by hand because this operation was complicated by the many grades, superelevations, and curvatures. A hand-propelled belting machine, followed by a broom, applied the final finish.

The finisher and other machines in the train were set for standard 24-foot slab width, but on narrower sections, an auxiliary form was set to carry the overhanging wheels of the equipment. In this way, slabs of varying widths could be poured and finished without changing the width of the machines.

(Concluded on next page, col. 2)

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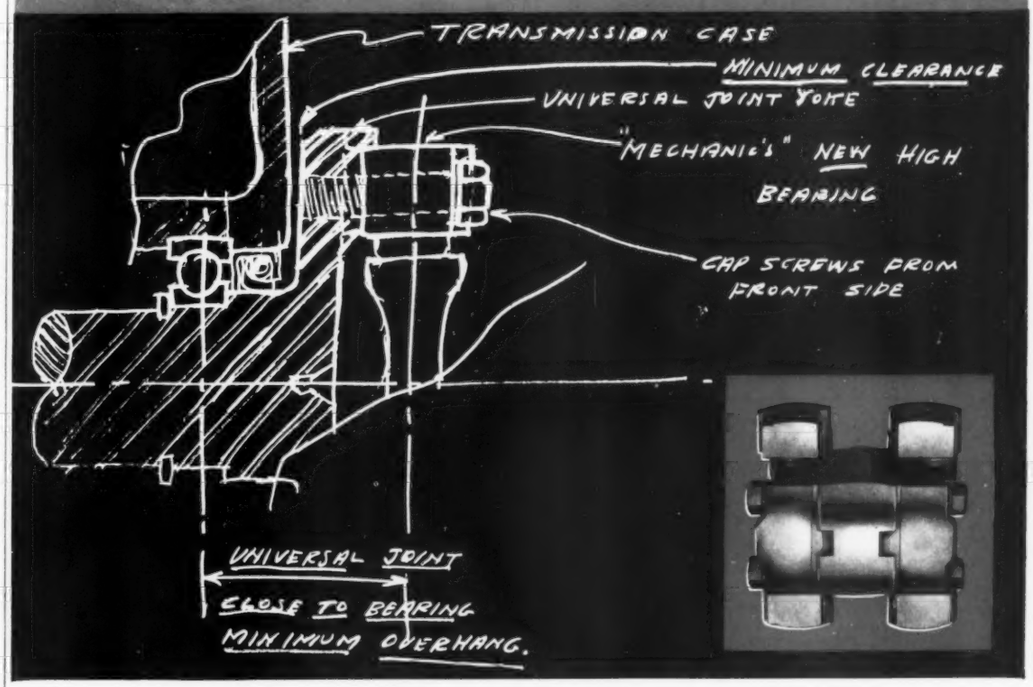

If you are faced with the problem of locating a universal joint in a space where limited clearance does not permit the use of a flanged joint, MECHANICS close-coupled Roller Bearing UNIVERSAL JOINT is your solution. This joint is specially designed for operation within cramped quarters that engineers formerly considered too short to accommodate a universal joint. Let our engineers show you how MECHANICS close-coupled UNIVERSAL JOINTS will conserve space, compensate for offset shafts and provide ample angularity in your new, compact models.

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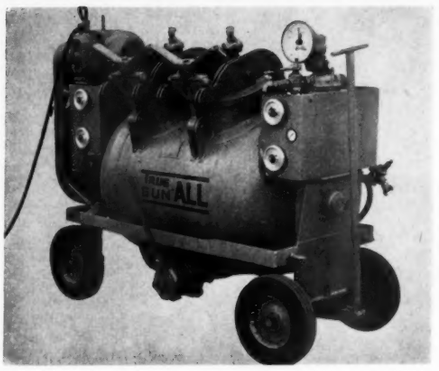
For more facts, use Reader-Reply Card opposite page 18 and circle No. 295

Line of lubricants

■ The complete line of Lubriplate lubricants is pictured and described in a catalog from the Lubriplate Division of Fiske Bros. Refining Co. The lubricants maintain a wear-resisting film on working surfaces of bearings, gears, chains, cams, slides, and other parts, thus reducing friction and power consumption, and arresting progressive wear, according to the catalog. The right lubricants for trucks, tractors, cement and aggregate plants, and other construction machinery are listed in a table.

To obtain Catalog 56-1 write to Lubriplate Division, Fiske Bros. Refining Co., 129 Lockwood St., Newark 5, N. J., or use the Request Card at page 18. Circle No. 84.



The True Gun-All pneumatic concrete-placing unit has its own mixer and will gun 3 to 4 cubic yards of mortar per hour.

Concrete-placing rig does its own mixing

■ A pneumatic concrete-placing unit that does its own mixing inside the pressure chamber and can deliver no-slump concrete is available from the True Gun-All Equipment Corp. The air placement machine is reported to be able to put in place 3 to 4 cubic yards of mortar per hour. It can be used in applying concrete, refractories, stucco, and similar materials.

The True Gun-All is furnished with either a gasoline or an electric engine to drive the mixing paddles. A 125-cfm gyro-type compressor is normally all that is needed to supply air for gunning the mortar. The rig will handle mortar of any moisture content, and the water-cement ratio is mechanically controlled.

According to the manufacturer, the Gun-All unit greatly reduces material rebound losses; affords a better bond of concrete to reinforcing steel; can use wet sand, eliminating the need for sand drying; and eliminates sand pockets and dusting. A direct hose or a 20-psi air-accumulator tank provides an adequate water supply.

For further information write to the True Gun-All Equipment Corp., Midstates Bldg., Tulsa., Okla., or use the card at page 18. Circle No. 108.

Pressure sensitive tapes

■ Job photos of Scotch brand pressure-sensitive tapes show that they can be used with plastic-coated plywood, in lift-slab construction, and in concrete-curing blankets of asphalt-treated paper. Scotch tape, a product of the Minnesota Mining & Mfg. Co., can also be used as a masking tape for aluminum windows and glass blocks, for restoring mortar joints of brick buildings, and as marking lanes in maintenance shops. The bulletin states that the tape is unaffected by acids, greases, salts, and water.

To obtain the bulletin write to the Minnesota Mining & Mfg. Co., Dept. L6-123, 900 Fauquier St., St. Paul 6, Minn., or use the Request Card at page 18. Circle No. 49.

(Continued from preceding page)

The slab was cured with burlap and water for five to seven days. Water was sprayed on the burlap by a 26-foot spraybar on a 2,000-gallon water tank mounted on a GMC 6×6 truck. A Jaeger pump, also mounted on this rig, carried water from a nearby creek to the tank and pumped water from the tank to a 1,000-gallon trailer tank which served the paver.

Because of the extremely short paving runs on this job, it was necessary to move the paving equipment from one set of forms to another many times during the work. Gast used a Koehring 605 crane to pick the machines off the forms and walked them to the next location without using a truck or trailer.

Personnel

Project superintendent for the Gast Construction Co. was Harry Weiss, and superintendent for Heavy Duty Construction Co. on the grading was E. L. Dickey. Project engineer O. F. Shriner represented the Indiana State Highway Department. THE END

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Work Time
Keeps Your
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FIFTY YEARS OF BETTER GEARS

For more facts, circle No. 296

SILENT HOIST
KRANE KAR
"DOES JOB FASTER, SAVES US ONE MAN," *says Jim Gull, Supt. Equip't., Gull Contracting Co., New Lincoln Tunnel Job, New York*

Another **SILENT HOIST "First" —FLUID DRIVE!**

"We had a 20-ton crane on the job; now the KRANE KAR* does it faster and saves us one man. Works all over site as utility crane, 8 hrs. a day, 5 or 6 days a week. Handles beams, buckets, concrete and steel forms, lumber, cement, etc. Stores incoming materials and delivers them where needed. Loads, unloads trucks, and carries big loads up and down ramp. KRANE KAR is easy to operate; we have a half dozen men here who can run it. Doing a fine job for us," says Mr. Gull.

Write for illustrated Bulletin No. 79

**KRANE KAR Swing-Boom Mobile Crane available gas or diesel; adjustable telescopic boom; rubber tired; 5 sizes: 1½, 2½, 5, 10, 12½ ton cap.*

SILENT HOIST & CRANE CO.
Pioneer Mfrs. of Heavy Duty Materials-Handling Equipment
898A 63rd ST., BROOKLYN 20, N.Y.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 297

Most Reliable Connections... for Your Suction and Water Hose

"KING" SHANK COUPLINGS

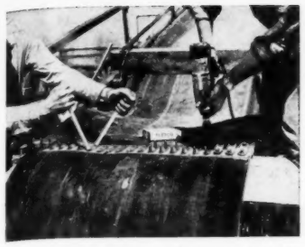
Strong, durable couplings with a reputation for long, reliable service among Contractors and other users of suction and water hose. Although built to take severest on-the-job punishment, they have refinements which contribute to outstanding efficiency and ease of handling . . . absolute uniformity in quality, threading and dimensions . . . well defined, smoothly finished corrugations.

Made in regular and heavy patterns, in all-malleable iron, plain or plated; all-brass; and malleable iron, plain or plated, with brass swivel nut. Sizes range from 1" to 8", inclusive.

Stocked by Manufacturers and Distributors of Industrial Rubber Products

DIXON
Valve & Coupling Co.
GENERAL OFFICES & FACTORY—PHILADELPHIA 22, PA.
BRANCHES—CHICAGO · BIRMINGHAM · LOS ANGELES · HOUSTON
DIXON VALVE & COUPLING CO., LTD., TORONTO Associate Companies:
Buck Iron Company, Inc., Quarryville, Pa. · Precision Drawn Steel Company, Camden, N.J.

For more facts, circle No. 298



As one man tightens down nuts with the alloy-steel wrench on an electric power tool, the other uses a pair of breakers to snap off the excess bolt.

Conveyor-belt splicing simplified with new kit

■ A kit from the Flexible Steel Lacing Co. is said to cut in half the time required to splice conveyor belts. The kit consists of Flexco belt fasteners, a special template, and a new boring bit and alloy-steel tightening wrench.

The template has two rows of holes to line up the drilling for bolt holes in both halves of the belt. One edge of the mask is notched to permit the aligning of the bolts so that the drilled belt can be placed over the bolts quickly and easily, eliminating the need for hand-inserting the fasteners from the pulley side of the belt.

The boring bit and tightening wrench are designed for use with standard air or electric impact tools. According to the manufacturer, two men can splice a 30-inch belt in less than 20 minutes with one of these kits.

For further information write to the Flexible Steel Lacing Co., 4656 N. Lexington St., Chicago 44, Ill., or use the Request Card at page 18. Circle No. 30.

Dial saws

■ Various models of dial saws are treated in a mailing piece from the manufacturer, Robertson & Ruth. The Model 200 for use with hand or power tools cuts holes from 1⅛ to 2½ inches in diameter. The largest saw, the Model 500, to be used for boring, planing, and grooving, can be used with a hand drill, lathe, or drill press, according to the literature. This model cuts holes up to 5 inches in diameter. All models are equipped with a spin-dial calibration. Specifications and pictures are included.

To obtain Form 3547 write to Robertson & Ruth, Dial Saw Division, Box 534, Elmhurst, Ill., or use the Request Card at page 18. Circle No. 161.

Road wideners

■ Blaw-Knox road wideners, Models 80, 85, and 95, are briefly described in a folder. The units are shown handling dirt, gravel, asphaltic concrete, portland-cement concrete, and stone in an uninterrupted flow from dump trucks and truck mixers. Specification data is given on the engine, transmission, axles, clutches, tires, weight, dimensions, and brakes.

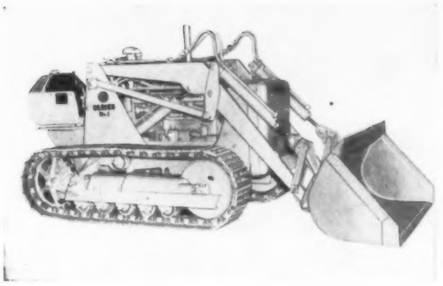
To obtain Bulletin No. 2458 write to Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 38, Pa., or use the Request Card at page 18. Circle No. 138.

For more facts, circle No. 299→

Tractor-shovel features 10-foot dumping height

■ A shovel for the new long-track Cat D2 tractor is available from the Ulrich Mfg. Co. The new shovel, designated the No. 2 tractor-shovel, is matched to the special Cat D2 tractor which is equipped with long, non-oscillating tracks and is built specifically for shovel work.

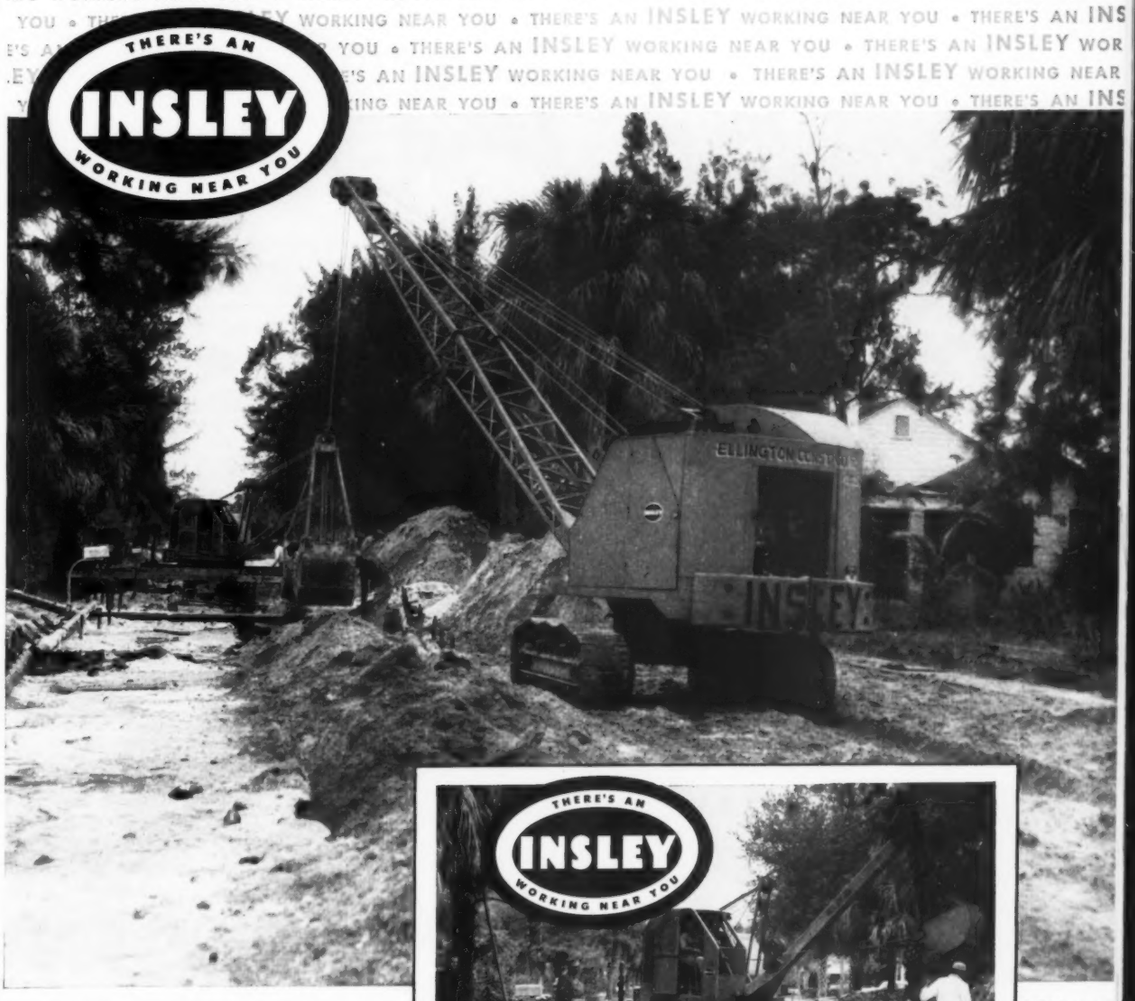
Powered by the Caterpillar No. 44 hydraulic control, the bucket has 35 degrees of tip-back at ground level, a dumping height of more than 10 feet, a dumping reach of nearly 3 feet, and a discharge angle of 80 degrees.

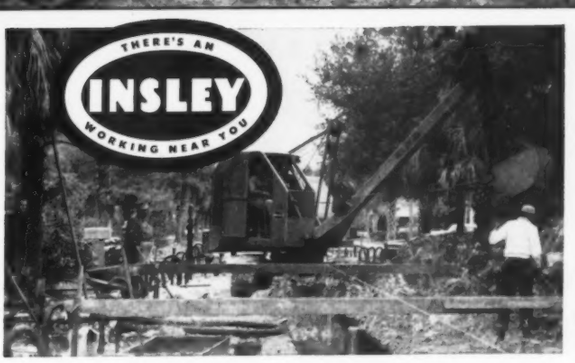


The Ulrich No. 2 shovel on the special Cat D2 tractor with long non-oscillating tracks.

The lifting arms are heavy box-sections cross-braced for extra rigidity. All bearing surfaces and pivot points have replaceable bushings.

For further information write to the Ulrich Mfg. Co., 1042 W. Grand Ave., Roanoke, Ill., or use the Request Card at page 18. Circle No. 119.





The Insley Manufacturing Corporation of Indianapolis has been manufacturing construction equipment since 1907.

The Insley line includes excavators and cranes 5 to 35 ton capacity—crawler or rubber mounted. Let your Insley distributor "show you an Insley at work."

Recognized as standard equipment by highway contractors for excavating and trenching—Insley's proven design characteristics give the contractor a dependable machine—simple to service, easy to maintain. Insley's rugged dependability means minimum down-time and more production hours.

INSLEY MANUFACTURING CORP. • INDIANAPOLIS, IND.
***Wholly owned subsidiary* / THE MAXI CORP. • LOS ANGELES**

General Road Machine's new Model 5-S portable compacting screed finisher for use on 20 to 32-foot pavement slabs.

New one-pass finisher works 32-foot slabs

■ A new portable compacting screed finisher for use on 20 to 32-foot-wide slabs is announced by General Road Machines, Inc. Known as the Model 5-S, the new machine is said to provide increased pavement production and lower operating costs because its two 16-inch-wide screeds can produce a smooth, finished surface in one pass, at rates up to 18 fpm.

A range of six travel speeds and twenty-four screed speed combinations allows selection of the finishing rate best suited to individual paving job requirements, according to the manufacturer. Instant reversing, full hydraulic control of front and rear screeds, easy interchangeability of track wheels, and positive drive on all four wheels are also said to contribute to the machine's operating efficiency.

The Model 5-S is fully adjustable for widths from 10 to 15, 12 to 18½, 20 to 26, and 20 to 32 feet. Special width sizes are also available. Frame width changes can be made quickly, without adding or removing parts. A built-in ratchet and bar speeds width adjustment. Provision also can be made for hydraulic self-widening of machine frames. Each screed is fitted with a double row of crown bolts for precise contouring of the screeds to roadway crown specifications.

An integral transportation rig, consisting of two retractable pneumatic-tire truck-type wheels and a hinged towing tongue, permits fast movement of the Model 5-S between job locations. Wheels are raised and lowered hydraulically. A hydraulic pedestal at the front end is provided for easy alignment of the towing tongue with standard truck hitches.

Transportation wheels are self-locking in both raised and lowered positions.

Power for the new finisher is supplied by a 32-hp, 4-cylinder, air-cooled gasoline engine. Optional power plants are available. Other optional equipment includes a quick crown-change device for transition work, a variety of track wheel types, hinged mesh strike-offs, vibrator attachments, and rear screed clutch throw-outs.

For further information write to the General Road Machines, Inc., Niles, Ohio, or use the Request Card at page 18. Circle No. 100.

Metal curtain walls

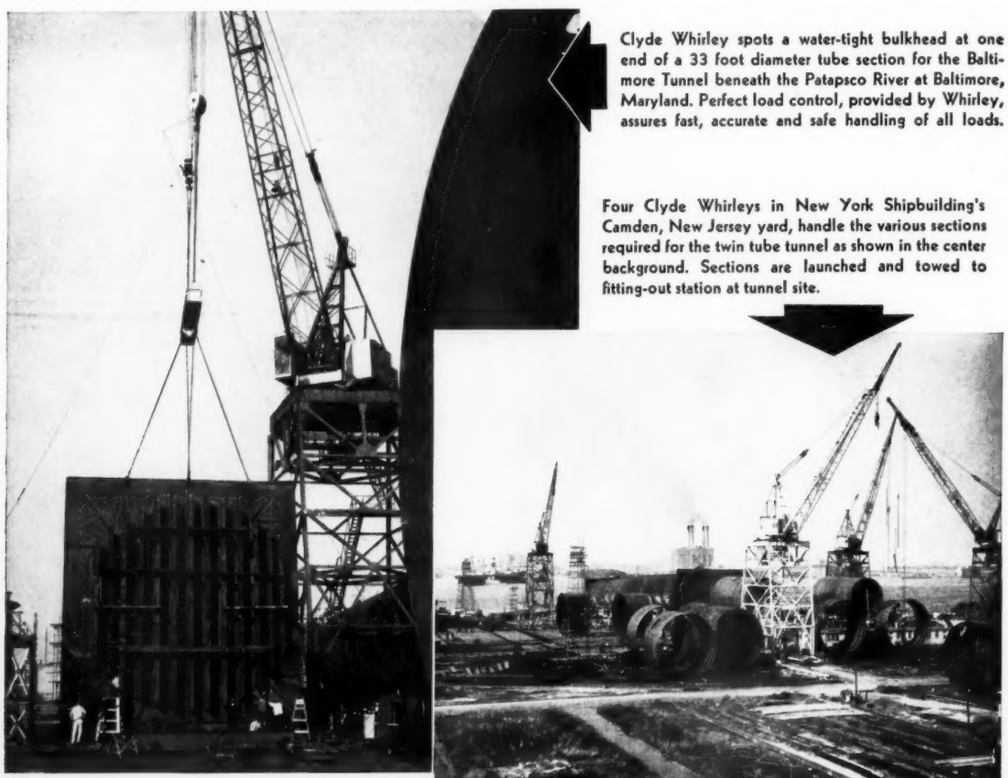
■ Two application-data bulletins from the Nelson Stud Welding Division give the short-form specifications and erection procedures for field-assembled insulated metal curtain walls, and single corrugated metal roofing and siding sheets. All the units are installed with a Setlok fastener, an all-aluminum cap that is said to be weather and corrosion-resistant. The application procedure and the cap itself are diagrammed.

To obtain Bulletins No. 421 and 421.1 write to Nelson Stud Welding Division, Gregory Industries, Inc., 2715 Toledo Ave., Lorain, Ohio, or use the Request Card at page 18. Circle No. 139.

Cable suspension idler

■ Design and application data of the Limberoller, a single-roll, cable suspension idler for belt conveyors, is contained in a bulletin from the Joy Mfg. Co. Pertinent details, diagrams, and specifications for each model of the brackets and stands needed for the idler are included.

To obtain Bulletin LD-105 write to the Joy Mfg. Co., 307 Oliver Bldg., Pittsburgh 22, Pa., or use the Request Card at page 18. Circle No. 45.



Clyde Whirley spots a water-tight bulkhead at one end of a 33 foot diameter tube section for the Baltimore Tunnel beneath the Patapsco River at Baltimore, Maryland. Perfect load control, provided by Whirley, assures fast, accurate and safe handling of all loads.

Four Clyde Whirleys in New York Shipbuilding's Camden, New Jersey yard, handle the various sections required for the twin tube tunnel as shown in the center background. Sections are launched and towed to fitting-out station at tunnel site.

New York Ship uses four Clyde Whirleys on unique, "assembly-line" tunnel project

Nine, huge, twin tunnel sections, built by New York Shipbuilding Corp. for Merritt-Chapman & Scott Corp. parent company of New York Ship and general contractor for the Baltimore Harbor tunnel project.

This assembly line process, developed by New York Ship, consists of 20 foot long sections, 33 feet in diameter, built and fabricated into 300 foot long sections. These are secured parallel to each other to provide twin tubes for vehicular traffic. Each twin tube section is fitted with water-tight bulkheads at both ends and ballasted with approximately 3000 tons of concrete placed in forms beneath the tubes to form a boat-like base. These sections are locked into position in a trench dredged across the bottom of the river; covered with backfill and then completed on the interior.

The many exclusive features of Clyde Whirleys, enables them to give the fatest, safest and most efficient service for handling any type of heavy cargo or materials.

For complete information, write for Bulletin 12.

HOISTS • DERRICKS • WHIRLEYS • BUILDERS TOWERS • CAR PULLERS • UNLOADERS • ROLLERS

CLYDE IRON WORKS, INC.
Established in 1899
DULUTH 1, MINNESOTA

A SUBSIDIARY OF BARIUM STEEL CORPORATION

For more facts, use Reader-Reply Card opposite page 18 and circle No. 300

Hydraulically actuated outriggers are a feature of the redesigned Model 190 SPC-55 Hopto digger.

Track-type digger has hydraulic outriggers

■ The Badger Machine Co. has announced design and engineering changes on its Model 190 SPC-55 Hopto digger. This model is now equipped with built-in hydraulically actuated outriggers. The operator can control each stabilizer individually for leveling the machine on uneven terrain.

The Hopto is equipped with a deluxe, enclosed-type boom and 5-inch ID cylinders on the hoist, crowd, and bucket-actuating equipment. The Model 190 SPC-55 is powered by a Continental F226 engine, and may be equipped with either a 24-gpm hydraulic system or a 36-gpm system.

The new model has a digging depth of 11½ feet and a 190-degree swing, and is reported to feature easy operation and fast cycling.

For further information write to The Badger Machine Co., 1122 N. Fifth St., Winona, Minn., or use the Request Card at page 18. Circle No. 128.

Alloy-steel welding

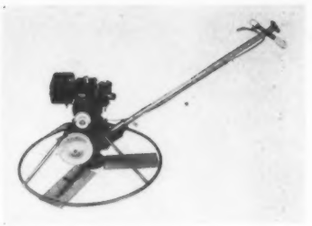
■ Alloy fluxes developed by The Lincoln Electric Co. for use in welding chromium, molybedenum, nickel, and vanadium to steel are described in a mailing piece from the company. The literature describes the two basic sets of standard procedures—for multiple-pass welds and for single and double-pass welds. Job photos point out uses of these alloy fluxes.

To obtain this mailing piece write to The Lincoln Electric Co., 22801 St. Clair Ave., Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 137.

Vibrating screens

■ A complete line of Telesmith vibrating screens is pictured in a bulletin from the manufacturer, Smith Engineering Works. Heavy duty scalpers and two and four-bearing finishing screens are described. Specifications are included, as well as job photos.

To obtain Bulletin No. 290 write to Smith Engineering Works, 504 E. Capitol Drive, Box 723, Milwaukee 1, Wis., or use the Request Card at page 18. Circle No. 90.



Optional steel bars can be added to the Champion Con-Trow'l to give it additional weight.

Trowel has tilting controls at handle

■ A new concrete-troweling machine has been introduced by the Champion Mfg. Co. Called the Con-Trow'l, the machine has a 36-inch fixed guard ring, reversible trowels, brake-band-type clutch for smooth takeoff, and trowel tilt controls at the handle.

Powered by a Briggs-Stratton Model 8 engine, the Con-Trow'l has a safety-type accelerator at the handle. When additional weight is needed, steel bars (optional equipment) can be added to the unit.

For further information write to the Champion Mfg. Co., 2028 Washington Ave., St. Louis, Mo., or use the Request Card at page 18. Circle No. 18.

TDA® BRAKES

where you have equipment to control or stop...

THE VERSATILE NEW DLM BRAKE

by Timken-Detroit® can offer remarkable help!

Versatility! Flexibility! The revolutionary DLM will serve effectively with a variety of equipment. It has already proved its value as a control or parking brake, and is used extensively on trucks, buses, machinery, farm equipment, cranes, shovels, hoists, golf buggies, and lift trucks.

Highly Efficient! The DLM brake is basically a self-energizing two-shoe brake in which both shoes do the same amount of work—give equal forward and reverse torque output, regardless of drum rotation.

Simpler! Only 8 parts, with interchangeable shoes and springs. Lubrication is not required. No internal adjustment necessary. Enclosed design guards against entrance of foreign matter and requires only a minimum of maintenance.

Lighter! More Payload Advantages! Improved TDA design using lightweight fabricated steel shoes and brake supports saves many pounds over heavier, more costly brakes.

For additional information and expert consultation about your control or brake problems contact Timken-Detroit® Brake Division. Complete specifications on the DLM are available.

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TIMKEN Detroit BRAKES
TIMKEN-DETROIT BRAKE DIVISION
ROCKWELL SPRING AND AXLE COMPANY
ASHTABULA, OHIO
The Accepted TDA Standard
TRADE MARK REGISTERED

For every industrial or automotive application where braking is required!

TDA plants at: Detroit, Michigan • Oshkosh, Wisconsin • Utica, New York Ashtabula, Kenton and Newark, Ohio • New Castle, Pennsylvania

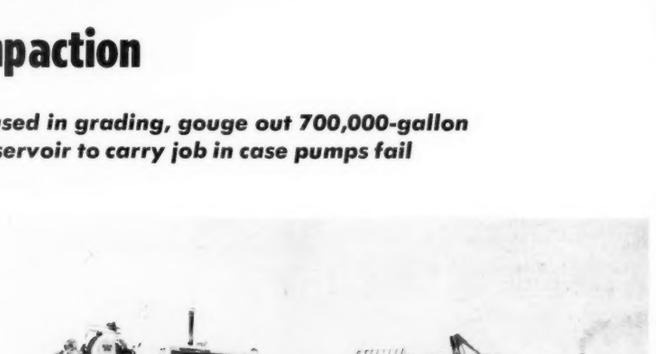
For more facts, use Reader-Reply Card opposite page 18 and circle No. 301

1 Lacking any supply of water at this arid site, the contractor brought 450 gpm 640 feet up from the ground through a 10-inch well. The 6-inch vertical turbine pump is driven by a Waukesha engine. *C&E Staff Photos*

Deep well drilled to provide water for airfield compaction

Scrapers, used in grading, gouge out 700,000-gallon storage reservoir to carry job in case pumps fail

2 A reservoir scooped out of the ground by scrapers holds 700,000 gallons of water pumped from the well. A Gorman-Rupp 6-inch centrifugal pump fills the supply trucks; a second Gorman-Rupp is for emergency use.

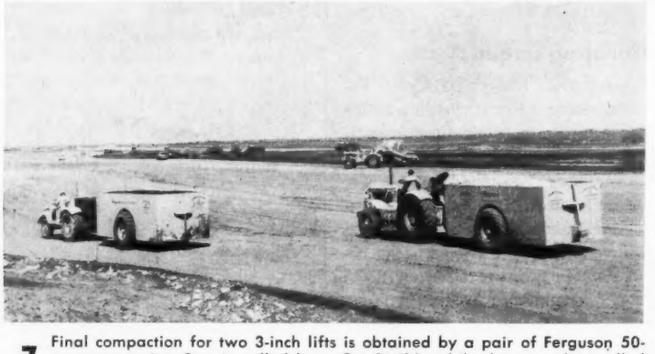


3 With a pushing assist from a Cat D8, a Caterpillar DW10 picks up a heaping load of dry sandy loam soil at the site of the air strip. The material loads well, but has a tendency to flow over the edges of the scraper bowl.

4 A 3,000-gallon tank trailer pulled by an International L-190 distributes water on the dry fill material. The watering fleet worked continuously, either wetting the fill or holding down dust on haul roads.

5 A Caterpillar No. 12 motor grader follows the watering truck, spreading the fill and turning it over when necessary, while a Cat D7 pulls a Towner disk to manipulate the material.

6 D8's pull Gebhard 120 rollers obtaining initial compaction on a 3-inch lift. These compaction units operated over the fill constantly as scrapers spread their loads in thin lifts.



7 Final compaction for two 3-inch lifts is obtained by a pair of Ferguson 50-ton pneumatics. One is pulled by a Cat DW20, while the second is pulled by a DW10.

Water is scarce between Alice and Orange Grove, Texas, an arid, almost desert-like region that supports little more than mesquite brush and cactus. But J. M. Dellinger, Inc., Corpus Christi, had to have it—and in tremendous volumes—for compaction of subgrade and some 150,000 cubic yards of base material for a landing field about 45 miles west of Corpus Christi.

Built as an auxiliary field for the Naval Air Advanced Training Command headquartering at the Naval Air Station at Corpus Christi, the new field includes an 8,000-foot long runway, 200 feet wide, together with a parallel taxiway, parking apron, and other facilities.

A 1,000-foot section at each end of the runway is paved with 11 inches of portland-cement concrete on an 8-inch caliche base, and the 6,000-foot center section is a flexible pavement, consisting of a 14-inch caliche subbase, 8 inches of crushed limestone base, and 3 inches of asphaltic concrete binder and surfacing. The taxiway and the 200×450-foot parking apron are constructed of portland-cement concrete and the 200×450-foot parking apron of concrete. A 150-foot-wide blast area around each end of the runway and taxiway is paved with a 1½-inch asphaltic concrete mat on a 6-inch compacted caliche base.

Plenty of water was needed for compaction—even more than the usual amount, because rainfall in the area is light and all the materials were bone dry. Since there were no streams, lakes, ponds, or other convenient sources of water, the contractor was left with a choice of two means of getting his supply.

One was to haul water in tank trucks from the nearest cities or other available sources. The second was to drill a deep well at the job site and attempt to pump enough water for the work. Either method was costly, and both were capable of causing job delays.

Drill deep well

Dellinger chose to drill a 10-inch well, which went down to a depth of 640 feet to tap suitable water, and take steps to safeguard the supply. A vertical turbine pump was installed in the well to bring water to the surface at a rate of about 450 gpm. The pump was powered by a Waukesha gas engine driving through an Amarillo right-angle pump drive.

To make sure that there would be enough water on hand to carry the job for several days in case the pumping equipment broke down, the contractor pumped the water to two storage facilities with a combined capacity of 717,000 gallons.

The first was a ground tank or reservoir holding 700,000 gallons of water, which was scooped out of the earth by scrapers assigned to runway grading. The sides and bottom were thoroughly compacted to make the reservoir reasonably watertight.

A 17,000-gallon steel storage tank, located near the ground storage tanks, was set up on an earth mound that had been built up 15 feet above the ground. This tank was used for secondary reserve storage and for speeding the job of loading the tank trucks hauling to the fill.

Water was pumped from the ground tank to the elevated tank by a Gorman-Rupp 6-inch centrifugal pump powered by a Le Roi engine. A second Gorman-Rupp 6-inch pump, available as a standby, could pump either directly from the ground tank to the trucks or to the elevated tank.

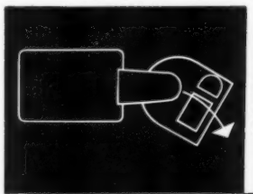
The 6-inch discharge line on the elevated tank was fitted with a Crane 6-inch quick-opening valve. When

(Continued on next page)

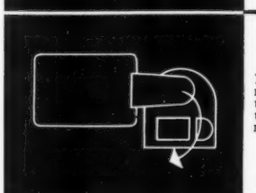
A Cat D8 and Ferguson sheepsfoot are stopped in the field while the tractor is serviced. The Ford lube truck carries 523 gallons of diesel fuel, 138 gallons of gasoline, three kinds of motor oil, and three kinds of grease. *C&E Staff Photo*

The new 7 to 20 ton SEAMAN-ANDWALL Pneumatic Compactor. Wheelbase 132". Overall length 211". Rolling width 90". Ground clearance 11". Overall height 71".

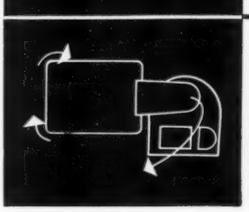
HOW THE 7-20 TON COMPACTOR TURNS 180° ON A 21 FT. ROAD



Powered front roller section starts turn. Rear section has not moved. Operator sits sideways, has excellent visibility.



Front section is now at 90°. Up to this point rear section still has not moved.



At this stage of the turn right rollers revolve backward, left rear rollers forward. All rear wheels are free-running, front rolls governed by friction clutches to eliminate scuffing.

KEEP THE JOB ROLLING *fast!*

There's news for you in the new — entirely new SEAMAN-ANDWALL 7 to 20 Ton Pneumatic Compactor:

NO SCUFFING — NO SURFACE SHEAR — NO MATERIAL DISPLACEMENT

That's because power is applied only to the front rolls to provide "straight down" pressure at all times — the only correct compaction principle.

THE JOB IS COMPLETED FASTER — 6 speeds forward from 1.5 to 20 mph; 2 speeds reverse 2 to 9 mph. And the Compactor is the most maneuverable of all the heavyweights . . . turns a full 180° in a 21 foot road.

HIGHER OPERATOR VISIBILITY: the driver sits sideways to forward travel, sees the work he's done and the work ahead.

POWER STEERING relieves operator fatigue, increases flexibility.

SELF-PROPELLED, the Compactor moves quickly from job to job under its own power.

A COMPLETELY NEW DESIGN with unusually low center of gravity so the compactor stays right side up and provides maximum compaction under all conditions.

ELECTRIC BRAKES, HEADLIGHTS and Sprinkler System complete the perfect picture.

Check with your SEAMAN-ANDWALL Distributor. Arrange for a demonstration.

New Bulletin completely describes SEAMAN-ANDWALL 7-20 ton Pneumatic Compactor. Send a postcard today. Ask for Bulletin PC-456.

STABILIZING THE WORLD

S-A SEAMAN-ANDWALL CORPORATION

282 N. 25th St.
Milwaukee, Wisconsin

For more facts, use Reader-Reply Card opposite page 18 and circle No. 302

Looking over the operations are, left to right, W. D. Monk, supervising construction engineer for the Navy; Lt. J. P. O'Connor, Navy resident officer in charge of construction; and Russell Edwards, grading superintendent for the contractor.
C&E Staff Photo

(Continued from preceding page)

the tank was full, a 3,000-gallon trailer tank could be loaded in just a little more than two minutes, while the 1,900-gallon tanks were filled in an average of 1¼ minutes.

To save water and to keep the loading area from becoming muddy, all trucks were loaded on a concrete platform that was situated between the elevated tank and the ground tank. A drain in the platform made it possible for any water spilled during the loading process to be returned to the ground tank, carrying with it any mud that had been trucked onto the platform.

Chain clears brush

Several operations preceded the actual grading. The growth of mesquite brush and cactus was first cleared from the area, a heavy anchor chain 150 feet long speeding the process as it was dragged between two tractors to strip a 150-foot swath in a single pass.

After brush had been piled and burned, a root plow attached to a Caterpillar D8 went over the entire 400-acre area to remove roots and stumps. The cleared area not taken up by the runway, taxiway, and other facilities will eventually be seeded with grass.

An additional job was that of fencing the entire field. A total of 5¼ miles of fence was put up to keep cattle from adjacent ranches off the new field. Fencing consists of treated wooden posts and woven-wire fence, topped with two strands of barbed wire.

Then, before initial grading started, topsoil was stripped from all fill and excavation areas and stockpiled. Approximately four inches of topsoil was salvaged to be replaced on shoulders, slopes, and borrow areas when paving had been finished.

While the general contractor was starting the grading, a subcontractor, T. H. Lee, Corpus Christi, was constructing the drainage facilities. In the developed area, 8,000 linear feet of reinforced-concrete pipe was laid for storm drains, and an equal length of open ditch was excavated to lead water from the occasional heavy rains to natural drainage channels.

Scrapers handle earthmoving

Practically all the earthmoving—630,000 cubic yards of material consisting of sandy clay subsoil and some of the underlying caliche—was loaded and hauled by four Caterpillar DW20 scrapers. Two Cat D8's worked as pushers to help the scrapers get heaping loads. Some of the caliche, hard enough to require ripping, was handled by the single tooth of a Caterpillar ripper that was pulled by a Cat D7.

The major grading problems were getting optimum water content into the fill and developing the 95 per cent modified Proctor density that was required before base material was placed.

As soon as scrapers had spread their loads in a 3-inch lift, water was distributed on the grade by a fleet of tank trucks ranging from the 1,900-gallon tanks on Ford F-750 straight trucks to 4,000-gallon tank trailers pulled by White trucks. Then Towner tandem disks pulled by Cat D7 tractors turned the material over in the thin lift, breaking up the lumps in the soil and mixing the water into the material. Wherever necessary, Caterpillar No. 12 motor graders turned the soil over again before they shaped each lift.

Lifts were thoroughly compacted by Gebhard 3-drum or Tampo sheepsfoot rollers that were pulled over the fills constantly by six Cat D8 tractors. When two lifts had been placed, disked, rolled with the sheepsfoot units, and shaped, final compaction was obtained with a pair of Ferguson 50-ton pneumatic compactors. One

"Never lets me down"

says Everett Datton, San Antonio, Texas, about the Allis-Chalmers Model D Motor Grader.

It's two homes a day, out Texas way—as Quincy Lee Construction Company works on a big-scale project of building 1400 new homes in two years.

One of the machines on the job is an Allis-Chalmers Model D motor grader used to grade roads, landscape homes and build driveways. Owner Quincy Lee says this about his Model D: "I'm very happy with it. It does a very fine job for us." Operator Everett Datton says,

"I like the Model D. It gets in and out of tight spots, especially where buildings are close together. With the D's fine control I can work between newly-planted trees and close to sidewalks without damaging trees or chipping cement. Not only is this machine good at fine grading, but its diesel engine has plenty of power for handling full capacity loads. I run it 9 hours a day, 5½ days a week. *She never lets me down.*"

• • •

Quincy Lee and Everett Datton are confirming what thousands of other Model D operators and owners know. In its class, you just can't beat the D for sure-fire performance at low cost. Watch it in action and you'll be amazed how the D's right combination of weight, power and traction lets it handle a wide range of jobs. And you can choose either diesel or gasoline engine models, plus number of attachments—including rear-mounted ⅝-yd loader and midship-mounted hydraulic scarifier, to increase the Model D's usefulness and efficiency.

See the Model D now at your Allis-Chalmers construction machinery dealer—headquarters for factory-trained servicemen, factory-approved facilities and True Original Parts.

Model D
50 belt hp diesel or gasoline engine

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

ALLIS-CHALMERS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 303

was pulled by a Cat DW20 tractor equipped with a yoke, the other was pulled by a DW10 from the drawbar.

The upper 6 inches of all cut areas were manipulated, watered, and compacted with the same methods that were used on the fills.

Servicing earthmovers

Lubrication of this spread of equipment was handled in the field by a crew using equipment mounted on the flat bed of a Ford F-600 truck. Alemite grease pumps and hose reels supplied chassis lube, track roller grease, and transmission grease to the fittings under air pressure. Three kinds of motor oil for gasoline engines, diesel engines, and air cleaners were carried in drums on the trucks and dispensed through hoses by Tokheim high-vacuum hand pumps.

A two-compartment tank on the truck carried 523 gallons of diesel fuel and 138 gallons of gasoline. These fuels were transferred to the equipment under air pressure, the air operating the grease pumps being furnished by a Curtis compressor.

Caliche pit nearby

Much of the subsoil in this area is underlaid with the softer caliche, but the contractor was fortunate enough to discover—within 100 yards of the job site—a dome of satisfactory caliche capable of supplying the 200,000 cubic yards of material needed for base aggregates. This caliche was hauled in and used to build the 8-inch base for the concrete pavement and the 14-inch subbase for the asphalt pavements. Spread in loose layers a maximum of 6 inches thick, it was watered, manipulated, and compacted in the same manner as subgrade material.

Getting the crushed limestone for the 8-inch base course of the flexible pavements and for aggregates for both concrete and bituminous pavements was more difficult. The job of trucking the limestone 60 miles from a commercial quarry and crushing plant near Beeville, Texas, to the stockpiles adjacent to the job site was started just about the time grading got under way. From that time until the paving job was finished, trucks streamed over the state highways and the dusty local approach roads, getting the limestone to the job.

The crushed base material, with a maximum size of 2 inches, was spread in courses that compacted to a maximum of 4½ inches. The base was handled in the same manner as the subgrade and subbase, and by the same equipment. Then, the base work completed, 11-inch slabs were put down in sections calling for concrete, and the remaining sections were given 1½ inches of bituminous binder and an equal thickness of bituminous surfacing material.

Paving work was completed this month, making it possible for jet training groups located at Corpus Christi, Kingsville, and Chase Field to use the auxiliary landing strip as a "bounce field." Present plans do not call for the construction of facilities for the permanent stationing of training groups at the airstrip.

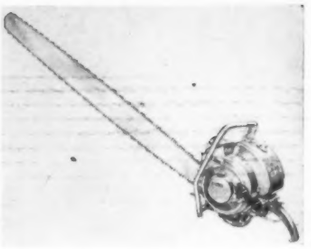
Supervising the job for J. M. Dellinger, Inc., was project manager D. R. Brewster. Grading superintendents were Russell Edwards and Tom Gamble. The Navy resident officer in charge of construction was Lt. (j.g.) J. P. O'Connor. The supervising construction engineer was W. D. Monk.

THE END

Nordberg representative

The new sales and service representative of the crusher division of Nordberg Mfg. Co., Milwaukee, Wis., in the Northwest-Pacific area is Jacob S. Risley, Jr. With headquarters at Milwaukie, Oreg., Risley will work under the jurisdiction of the company's West Branch in San Francisco, Calif.

The new Homelite Model 7-29 chain saw for heavy-duty cutting.



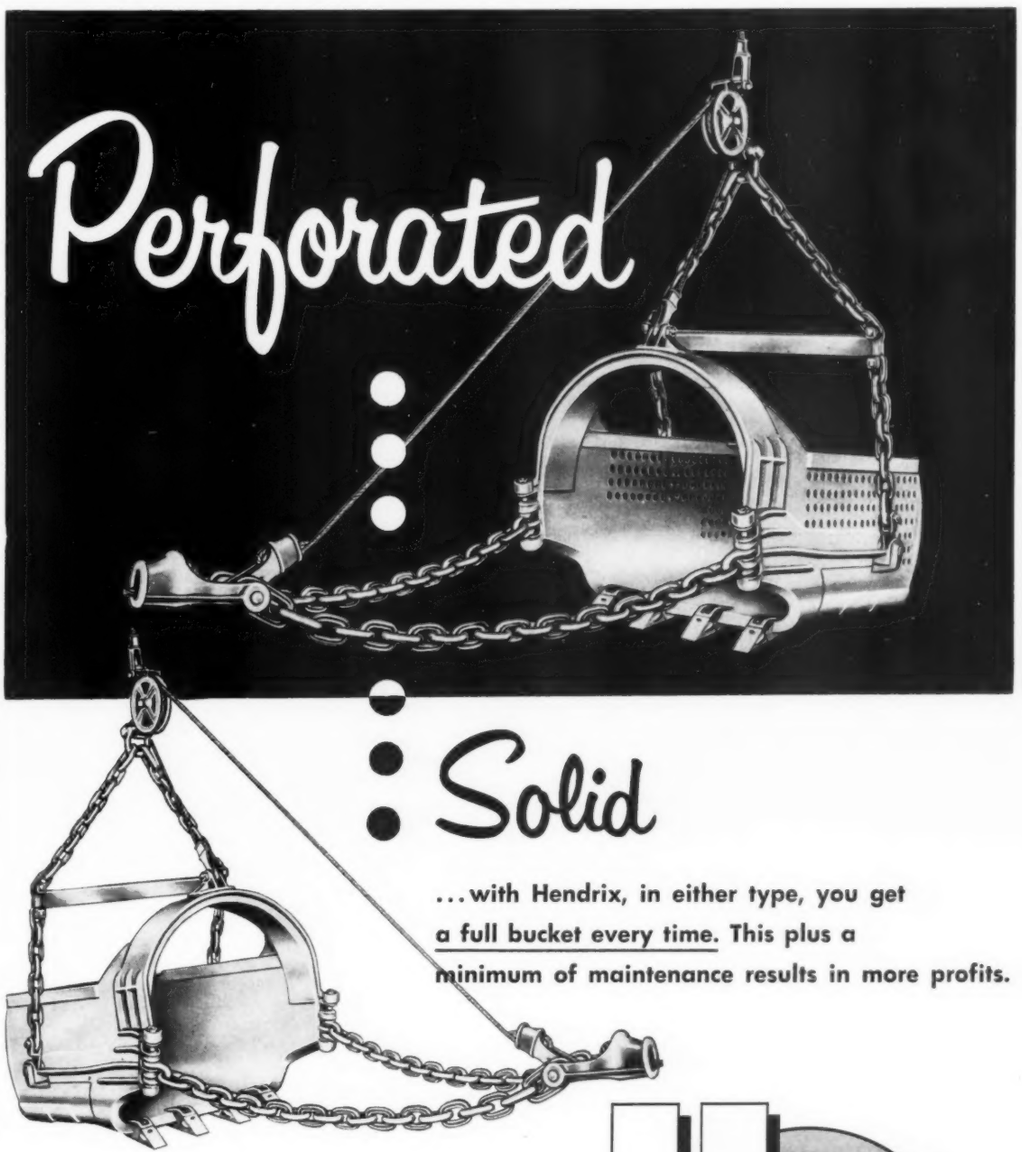
New chain saw will fell 10-inch-diameter trees

■ A one-man-operated chain saw that is said to be able to bring down trees 10 feet in diameter has been announced by Homelite. The new Model 7-29 delivers 7 horsepower and weighs 29 pounds.

With its all-position, all-angle carburetor, the Model 7-29 cuts at any angle with no adjustments and no loss of power. It makes any type of cut for notching, felling, bucking, boring, limbing, or undercutting operations.

Among its features, the saw offers: short-stroke engine design; quick starting, weather-proof ignition; integral cooling fan; aviation-type cylinder with chrome-plated bore; aluminum piston; and die-cast magnesium and aluminum alloys for strength and light weight.

For further information write to Homelite, 75 Riverdale Ave., Port Chester, N. Y., or use the Request Card at page 18. Circle No. 7.



...with Hendrix, in either type, you get a full bucket every time. This plus a minimum of maintenance results in more profits.

A TYPE FOR EVERY DIGGING PURPOSE

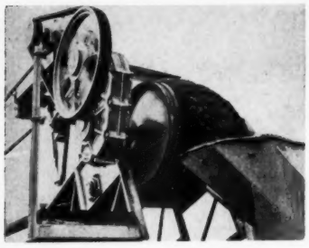
¼ to 40 Cubic Yards

Hendrix Lightweight DRAGLINE BUCKETS

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 304



The new Dodge No. 8 torque-arm speed reducer, shown mounted on a 225-foot-long belt conveyor, has a capacity of 60 hp at 100 rpm.

Add two models to line of speed reducers

■ Two new models of shaft-mounted units have been added to the Dodge of Mishawaka line of torque-arm speed reducers. The company now offers shaft-mounted speed reducers with capacities of from 1 to 60 horsepower and output speeds of from 12 to 365 revolutions per minute.

The new models are at opposite ends of the horsepower scale. The No. 8, in the double-reduction series, has a capacity of 60 horsepower at 100 rpm, AGMA rating, and can be mounted on shafts up to 5 inches in diameter. At the other end of the torque-arm line is the No. 11, with a capacity of 1.3 horsepower at 100 rpm.

No foundation, flexible couplings, or sliding base is required for any of the reducers. The reducers are mounted directly on the shaft, and the torque arm is fastened to any fixed object, anchoring the reducer. The unit is driven through a V-belt drive. Dodge Taper-Lock sheaves permit any speed ratio desired.

For further information write to the Dodge Mfg. Corp., Mishawaka, Ind., or use the Request Card at page 18. Circle No. 25.

A list of conventions, that will be of interest to our readers, appear on page 52 of this issue.

New inspection device needs no electricity

■ A new magnetic-particle inspection device that requires no electrical power has been announced by the Magnaflux Corp. The portable Magnaflux YM-5 Yoke Kit is said to find cracks in magnetic parts or members and is recommended for the field inspection of frame members and external parts of equipment and trucks.

The portable Magnaflux YM-5 Yoke Kit reliably finds cracks in magnetic parts and members without the need for electric power or disassembly.

The YM-5 reportedly finds surface and fatigue cracks in magnetic parts. The kit comes complete with a metal storage and carrying case, and weighs 22 pounds. The yoke legs are hinged and the angle-cut tips rotate so that good magnetic contact can be made on parts of almost any shape.

The magnetic pull is over 40 pounds on a flat surface, while the yoke itself weighs 5 pounds. A spray gun, two powder bulbs, and wet-batch and dry-powder magnetic particle materials are standard equipment on the YM-5 Kit.

For further information write to the Magnaflux Corp., 7300 W. Lawrence Ave., Chicago 31, Ill., or use the Request Card at page 18. Circle No. 2.

Hoppers; buckets

■ Cmetco buckets and hoppers are featured in a bulletin from the manufacturer, Creative Metals Corp. Hoppers shown are double and single-gate vertical-front floor, center-discharge floor, and receiving types. Data is given on utility buckets, rubber chutes, elephant trunks, and tilt-up braces. Specifications are included.

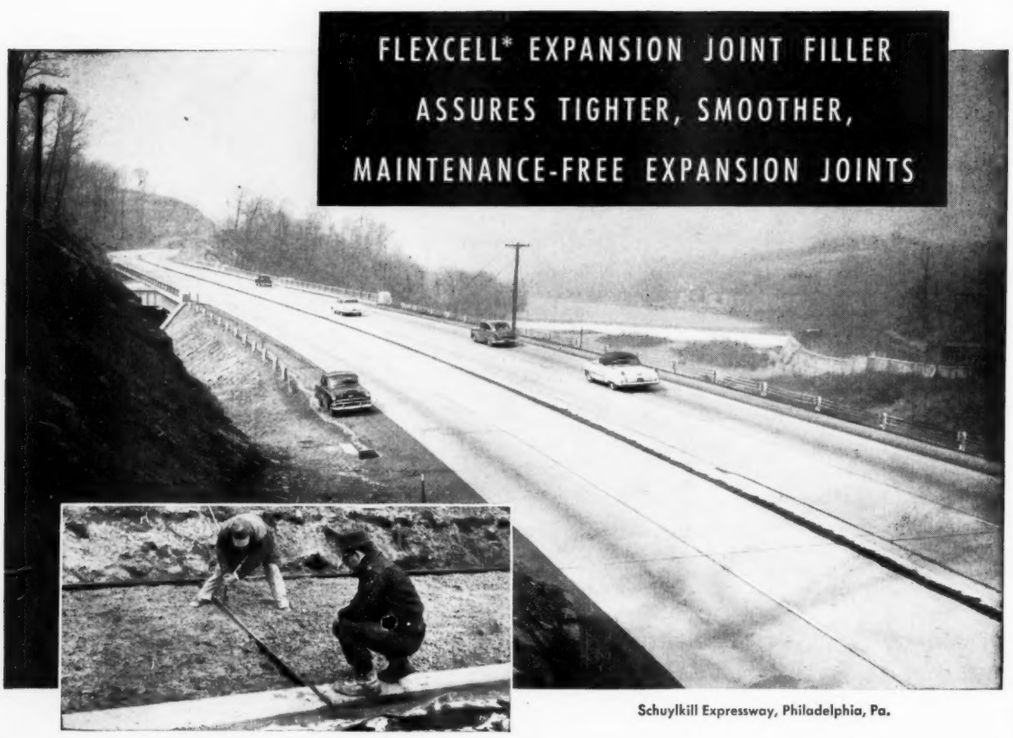
To obtain Bulletin CM-22 write to Creative Metals Corp., 1290 Powell St., Emeryville, Calif., or use the Request Card at page 18. Circle No. 122.

Steel processing belts

■ The Wissco line of standard steel processing conveyor belts, products of The Colorado Fuel & Iron Corp., are discussed in a catalog. Pictures of the actual size of the open-mesh constructed belts and complete installation diagrams are included.

To obtain the catalog write to The Colorado Fuel & Iron Corp., 575 Madison Ave., New York, N. Y., or use the Request Card at page 18. Circle No. 34.

Smoother, easier driving...mile after mile ...on the Schuylkill Expressway



Schuylkill Expressway, Philadelphia, Pa.

Across America, wherever traffic is heavy and fast, the need is for roads that can *take* it. Roads with joints that stay closed, smooth, free from troublesome, costly maintenance. Many such roads are proving themselves daily . . . through the use of Flexcell Bituminous Fiber Expansion Joint Filler.

Severest traffic and climatic conditions have tested tough, durable Flexcell Expansion Joint Filler . . . shown it to be a big cost-saver in long years on the job. The reason: The extreme resiliency of its rugged cane fiber board core. When concrete expands, Flexcell Expansion Joint Filler compresses without extruding. As concrete contracts, the filler springs back to normal. Joint stays neat, smoothly closed. Laboratory tests prove that even after compression to 50% of original thickness, a "recovery" of over 70% is made.

Flexcell Expansion Joint Filler is low in cost, easy to work with, provides finished joints without trimming. Impregnated with a durable asphaltic compound to resist moisture. Protected against dry rot and termite attack by exclusive Ferox® Process. Will not become sticky or brittle with weather changes. And its rough-textured surface makes a firm bond with concrete. It's ideal for work involving special cutting, tapering, fabricating.

Leading engineers, contractors, architects, many Federal, State, and Municipal agencies have long specified Flexcell Expansion Joint Filler. Investigate the advantages of this widely-preferred filler before you start your next job.

Mail coupon for full data on benefits and economies of Flexcell Bituminous Fiber Expansion Joint Filler for roads, runways, sidewalks, curbs, gutters, driveways, concrete floors and roof decks. No obligation.

Another Famous CELOTEX Product

FLEXCELL

REG. U.S. PAT. OFF.

BITUMINOUS FIBER EXPANSION JOINT FILLER

The Celotex Corporation, 120 S. LaSalle Street, Chicago 3, Illinois

*Flexcell is a Trademark identifying Bituminous Fiber Expansion Joint Filler marketed by The Celotex Corp.

MAIL COUPON TODAY!

The Celotex Corporation, Dept. CE-86
120 S. LaSalle St., Chicago 3, Illinois

Without obligation, please send me complete data and prices on Flexcell Bituminous Fiber Expansion Joint Filler.

Name.....

Address.....

City.....Zone.....State.....

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 305

The TGB-41 operated floodlight

Compressed air powers new safety floodlight

■ A new type of explosion-proof floodlight powered by compressed-air turbogenerators and cooled by exhaust air has been introduced by Atlas Copco Eastern, Inc. The new TGB-41 150-watt 12-volt floodlight is said to be especially adapted to tunneling and other work where electric power is not readily available.

The 22-pound semiportable lamp draws 23 fpm of air at pressures ranging from 60 to 100 psi. Constant turbogenerator speed is maintained by special reducing valves, regardless of variations in the unit's primary air supply.

Another special feature of the new floodlight is a filtering device which prevents foreign matter from entering the turbogenerator through its ½-inch air-supply coupling. An automatic turbine cutoff insures full safety in the event the blastproof lens is shattered by external impact during operation.

For further information write to Atlas Copco Eastern, Inc., 151 Linwood Ave., Paterson, N. J., or use the Request Card at page 18. Circle No. 129.

Distance measurement

■ Three models in the Rolatape line of measuring wheels are described in literature. The Model 200 records the total distance of inside or outside areas in feet and inches by a recessed-scale circumference and built-in totalizer. The Models 400 and 600, with a 4 and 6-foot circumference, respectively, register to 100,000 feet, according to the literature.

To obtain the literature write to Rolatape, Inc., P. O. Box 1190, Santa Monica, Calif., or use the Request Card at page 18. Circle No. 164.

Power takeoffs

■ The complete line of friction power takeoffs manufactured by Twin Disc Clutch Co. are announced in a bulletin. Complete information is given on specifications, installation, and driving-ring dimensions, and allowable side-pull loads. Horsepower ratings range from 31 to 602.

To obtain Bulletin No. 308 write to Twin Disc Clutch Co., Racine, Wis., or use the Request Card at page 18. Circle No. 55.

A MIXING PUGMILL designed for the needs of the stabilization mixing field has been announced by the Barber-Greene Co. The unit has a capacity of 350 tons per hour. Mixing of materials is handled by a twin-shaft pugmill and a hydraulically controlled, 5-cubic-yard discharge hopper which serves as a dam to control the measuring height of the material on the pugmill and the length of the mixing time. Measuring 8 x 2¾ x 4 2/3 feet, the Barber-Greene pugmill handles cement, calcium chloride, and other water-mixed stabilizing agents. It is equipped with water spraybars and accurate meter-centrifugal pump combination which can supply as much as 150 gpm to the pugmill. Additional information may be obtained by circling No. 13 on the Request Card at page 18, or by writing to the **Barber-Greene Co.**, 400 N. Highland Ave., Aurora, Ill.

Snug right-of-way just routine condition for compact maneuverable Cleveland®

Dodging utility poles, trees and other obstructions, the compact, husky Cleveland "110" cuts utility trenches efficiently in narrow clearances like this. Its full-crawler mounting and low ground bearing pressure are real public relations assets because they minimize damage to lawns, sidewalks and driveways . . . permit efficient digging in soft muddy ground and rugged terrain too. Fast, safe trailer portability, coupled with full-crawler on-the-job maneuverability and a wider range of usable digging speed combinations make Clevelands fast *to* the job and fast *on* the job. You dig more trench . . . in more places . . . at less cost . . . with dependable Clevelands, first choice for utilities trenching for more than 30 years. Talk it over with your local distributor.

Good Everywhere

THE CLEVELAND TRENCHER COMPANY

20100 ST. CLAIR AVENUE • CLEVELAND 17, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 306

Management

The engineering department

Estimating

This is the eighth of a series of articles on Construction Management by George E. Deatherage, P. E., construction consultant. The articles are based on an eight-volume "Manual of Advanced Construction Management" published by Geo. E. Deatherage & Son, P. O. Box 921, Lakeworth, Fla. The manual is used in a training course for superintendents and project managers, and is directed primarily at those contractor employees who have reached the foreman level or its equivalent, and who need practical help in order to take complete charge of construction projects themselves.

by GEORGE E. DEATHERAGE, P. E.
Construction Consultant

Estimating is the most vital part of the business of doing construction work for a profit. Lack of proper estimating causes the majority of bankruptcies, and most bankruptcies can be traced to one error: selling goods for less than the cost of production. For contractors, this error comes with low bidding. There are a number of methods that will help a contractor or estimator avoid this mistake, and at the same time secure estimates that are accurate and simple to prepare.

Quantity Survey method

To the contractor, an estimate is a mass of figures representing a detailed quantity survey of all the materials that will go into a completed structure, together with their costs, the cost of the labor needed to install them, and numerous indirect and overhead expenses. The estimate showing labor and material costs for each specific item can be prepared under the Quantity Survey method. In this system, the job overhead is calculated item by item, or it may be reduced to a percentage of the cost and added to each unit. The main office administrative expense, and insurance and profit must also be added to the estimate summary. The square-foot or cube method is helpful only in checking a completed estimate made

RUBBER-BEARING Emulsified Asphalts Now Available from All McConnaughay Licensees

McConnaughay Licensees Provide Complete Paving Service

PRACTICAL EXPERIENCE in the field and continuous research on Rubber-Bearing Asphalt Emulsions, conducted in this central laboratory at Lafayette, have reached the stage at which these emulsions are now being offered to engineers interested in appraising them for any type of bituminous construction. To designate Rubber-Bearing, the letter "R" is added to the standard emulsion description. Rubber-Bearing Emulsions RS-1-R, RS-2-R, MS-R and SS-R are now available at all plants.

MILLS like Model B-14-18 (illustrated) are designed for quality-controlled production of emulsions in quantities up to 100,000 gallons per day

ACCURATE MIXING of emulsions and aggregates according to McConnaughay specifications meets general as well as local requirements.

McCONNAUGHAY LICENSEES . . . manufacturer-contractors fully equipped to carry out the final step in coordinated service from laboratory to emulsifier to mixer to paver.

For any paving requirement, get in touch with your nearest McConnaughay Licensee or contact . . .

McCONNAUGHAY LICENSEES
Operating K. E. McConnaughay Emulsified Asphalt Plants

1. C. C. Plumb, Elmwood Station P. O. Box 65, *Providence 7, R. I.*
2. C. C. Plumb *Portland, Connecticut*
3. Albany Asphalt & Aggregates 75 State St., *Albany, New York*
4. Knight Paving Products, Inc. 1655 Union Rd., *Gardenville, N. Y.*
5. Knight Paving Products, Inc. Vine Street, *Ithaca, New York*
6. Knight Paving Products, Inc. 1980 East Avenue, *Rochester 10, N Y.*
7. Knight-Bitumen Corp. *Watertown, New York*
8. Seaco, Incorporated 2700 Industrial Drive, *Columbia, S. C.*
9. E. A. Mariani—Emulsified Asphalt Hooker's Point, *Tampa, Florida*
10. Bituminous Materials Co. *Metairie, Louisiana* Serving Alabama, Mississippi, and Louisiana
11. Asphalt Products Co., Inc. Powell Ave., *Nashville 11, Tenn.*
12. Bituminous Materials Co. P. O. Box 267, *Terre Haute, Ind.*
13. Wabash Valley Asphalt Co. *Terre Haute, Indiana*
14. Brookman Construction Co. 17th & Gharkey Sts., *Muncie, Ind.*
15. Fauber Construction Co. *Lafayette, Indiana*
16. Asphalt Materials & Construction, Inc. 960 E. 22nd, *Indianapolis 2, Ind.*
17. Ready-Mix Asphalt, Inc. P. O. Box 882, *Fort Wayne 6, Ind.*
18. Walsh & Kelly R. R. #2, *Gary, Indiana*
19. Bituminous Materials Co. 416 S. Water St., *Jackson, Mich.*
20. Bituminous Materials Co. 318 Atlantic St., *Bay City, Mich.*
21. Emulsions, Inc. *Laurenceville, Illinois*
22. Bituminous Materials & Supply Co. 415 Maple St., *West Des Moines, Iowa*

Plants:
23. *Spirit Lake, Iowa*
24. *Iowa City, Iowa*
25. *Menlo, Iowa*
26. Emulsified Asphalt Co. *Kuttawa, Kentucky*
27. Doherty and Swearingen Co. 53 Main St., *Yarmouth, Maine*
28. Bituminous Materials Co. *Escanaba, Michigan*
29. James Huggins & Sons, Inc. Medford & Commercial Sts. *Malden 48, Massachusetts*

Eastern Representative:
John A. Dow
157 Church St., *New Haven 10, Conn.*

SPECIFICATIONS OF THESE COLD-MIX PROCESSES AVAILABLE ON REQUEST

1—Penetration Macadam, 2—Open-Graded Plant Mix, 3—Open-Graded Road Mix, 4—Dense-Graded Plant Mix, 5—Dense-Graded Road Mix, 6—Mat Coat, 7—Seal Coat, 8—Sand Mix, 9—Sand Honing, 10—Patching, 11—Mastic-Mix, 12—Driveway Construction.

K. E. McCONNAUGHAY LAFAYETTE INDIANA
EMULSIFIED ASPHALT PLANTS AND PROCESSES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 307

SEE THE **Sasgen** LIFTAMATIC at your dealer's...

ALUMINUM OR STEEL MODELS

Lifts up to 1200-lb. load to 110 ft.

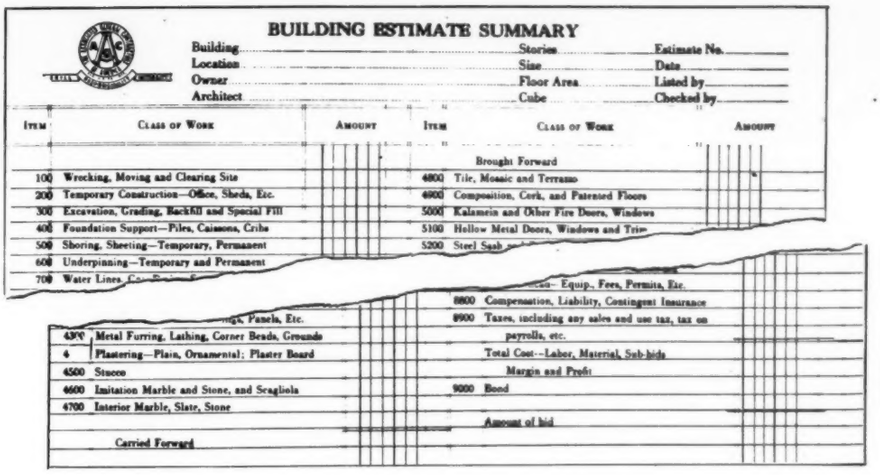
Handles bulk or unitized loads

Gas or Electric Powered

OR WRITE DIRECT FOR LATEST LITERATURE

Sasgen DERRICK COMPANY
3127 GRAND AVENUE • CHICAGO 22, ILLINOIS

For more facts, circle No. 308



BUILDING ESTIMATE SUMMARY

Building ..... Stories ..... Estimate No. .....
Location ..... Size ..... Date .....
Owner ..... Floor Area ..... Listed by .....
Architect ..... Cube ..... Checked by .....

Item	Class of Work	Amount	Item	Class of Work	Amount
				Brought Forward	
100	Wrecking, Moving and Clearing Site		4800	Tile, Mosaic and Terrazzo	
200	Temporary Construction—Office, Sheds, Etc.		4900	Composition, Cork, and Patented Floors	
300	Excavation, Grading, Backfill and Special Fill		5000	Kalamein and Other Fire Doors, Windows	
400	Foundation Support—Piles, Caissons, Cribs		5100	Hollow Metal Doors, Windows and Trim	
500	Shoring, Sheeting—Temporary, Permanent		5200	Steel Sash	
600	Underpinning—Temporary and Permanent				
700	Water Lines, Co...			...Equip., Fees, Permits, Etc.	
			8800	Compensation, Liability, Contingent Insurance	
	...gs, Panels, Etc.		8900	Taxes, including any sales and use tax, tax on payrolls, etc.	
4300	Metal Furring, Lathing, Corner Beads, Grounds			Total Cost—Labor, Material, Sub-bids	
4	Plastering—Plain, Ornamental; Plaster Board			Margin and Profit	
4500	Stucco		9000	Bond	
4600	Imitation Marble and Stone, and Scagliola			Amount of bid	
4700	Interior Marble, Slate, Stone				
	Carried Forward				

The Building Contractor's Estimate-Summary Sheet, used for totaling quantities and prices.

by the Quantity Survey procedure, which is the only accurate method to use.

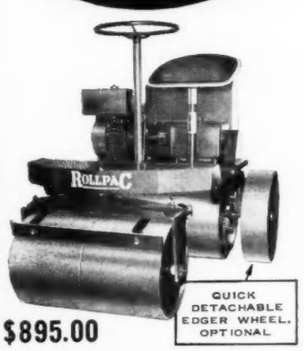
Making sure that every item is included in the estimate is a job in itself. Labor and material prices are constantly changing, and efficiency and overhead are variables that have to be taken into account when an estimate is being prepared. These variables cannot be reflected by a per-cubic-foot or per-square-foot price.

In foreign countries, and on some work in the U. S.—such as jobs on some types of roads, railroads, bulkheads, and filling—the contractor is supplied with a quantity survey and bids are taken on a unit-price basis. Some U. S. contractors also employ quantity surveyors, leaving the estimator to do the pricing only. In most cases, however, the estimator has to do both jobs.

The estimator must have enough experience or training so that he is able to visualize the completed structure and its component parts. And he must be able to visualize the various steps required to construct any part of a structure. If the proper method of construction is not obvious, he should take time to sketch out the various methods on a Flow Diagram and build a Process Chart. The best

(Continued on next page)

THE ROLLPAC



$895.00

A Standout One Ton Roller in worldwide use by Contractors, Paving Engineers and Institutions.

Ask To See It.

ROLCOR *Industries*
1208 2nd Ave. So. Minneapolis 3, Minn.

For more facts, circle No. 309

New SUPERIOR
Heavy-Duty
SCREED SUPPORTS
Pat. Applied For

For Use with 1¼" and 1½" I.D. Pipe Screeds and Vibratory Screeding Equipment

ADJUSTABLE SCREED HOLDER
Consists of a 1" threaded rod to which is welded a cradle to hold the pipe screed. This cradle is slotted as shown so that the arms may be bent over to secure the 1¼" or 1½" I.D. pipe screed. Threaded onto the rods is a half nut which provides the adjustment.

Especially Designed for Use on Bridges, Underpasses and Overpasses

These Screed Supports are designed to take the heavy loads imposed by traveling vibrating screeding equipment. The Bases for the screed holders are of two types: (1) The Metal Base for use on structural steel members; (2) the Chair-Type Base for use on a plywood deck.

On Structural Steel: As shown above, the Metal Base is tack-welded to the top flange on approximately four foot centers. The Screed Holder is set into the base, and adjusted to height by turning the nut. The threads are fast, three to the inch, and of a contour type, non-clogging and easily cleaned.

On Wood or Plywood Decks: The Chair Base is set on the deck at approximately four foot centers. It is easily secured to the deck by nailing across the upturned legs. If desired, legs can be supplied of galvanized wire. The Chair Base with holder is shown below.

PERFORMANCE

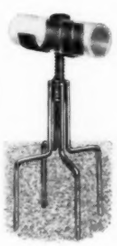
Superior's Heavy-Duty Adjustable Screed Supports have been used on turnpike structures and other projects. Results in the field indicate that this method of supporting screeds provides a simple answer to an otherwise expensive and complicated set up. *Write for Bulletin.*

HOLDER INSERTED IN CHAIR BASE

Only the inexpensive bases are left in the concrete. The Adjustable Holders are easily removed, together with the pipe screed, because the holders are set, not screwed into the base. The nut fully covers the base opening and prevents concrete from entering.

Adjustable
Standard SUPERIOR SCREED CHAIRS

FOR FORMED SLABS 4½" AND GREATER
With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.



FOR SLABS ON FILL
With re-usable screed holders using 1" I.D. pipe and rectangular bars for screeds.

SUPERIOR CONCRETE ACCESSORIES, INC.
4110 Wrightwood Avenue, Chicago 39, Illinois
New York Office
1775 Broadway, New York 19, N. Y.
Pacific Coast Plant
2100 Williams St., San Leandro, Calif.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 310

method will be the one that requires the least number of operations, movements, delays, and inspections.

Instead of visualizing all the details of each method, the estimator makes a "paper picture" of them and subjects each to a detailed analysis. In most cases, he can determine the easiest method to use without going through this process analysis. But even the simplest function is worth analysis by this method if large quantities are involved, for a saving of only a few cents per unit will often add up to a considerable amount of money.

Before the estimator actually starts a quantity takeoff, he must familiarize himself with all the available documents—the invitation for bids, bid form, plans, specifications, contract form and general conditions of the contract, date of bid opening, and bond requirements. A visit to the site will enable him to visualize the completed structure and secure needed data on such things as requirement for site clearance, obstructions, adjoining property, type of soil, and drainage conditions. If a topographic survey of the site is not supplied, the estimator should arrange to have one made. The same is true for core borings. The quickest and easiest way to get a general knowledge of plans is to study the site layout and plan views, then, cross section by cross section, follow these through in consecutive order.

Estimate Check List

Since it is impossible for anyone to remember the thousands of items needed in a construction project of some size, the only safe practice in estimating is to use an Estimate Check List. The accomplished estimator can usually build up his own check list for the class of work he is doing. It may consist of several thousand items, many of which will not be required on specific projects. However, it is good to have all these items typed on cross-section paper. Then, as the estimator goes through plans and specifications before making a takeoff, he can check off a needed item of material in one of the squares on the paper. These check marks are crossed off this list as a takeoff is made.

The first item on this list, under General Conditions, is the bond. If it is required, it is entered on the estimate sheet and checked off the list. Workmen's compensation, public liability, and property damage are handled in the same manner. These items cannot be calculated until the total of the estimate is known, so many estimators carry these items forward to the last sheet, and enter the price for each item as a final step.

The first three sections of the check list deal with overhead items that are not shown in the plans but are called for in specifications and other contract documents.

The remaining sections cover actual construction. If an item is required a takeoff is made for the estimate, and the item is checked off the estimate check list. If there is some doubt that an item is required, plans and specifications can be rechecked. Items that are included in the takeoff should be checked off the estimate check list in colored pencil. In this way, the estimator will be able to note unchecked items before he makes a final check of the plans. And if he is called away from his work, the colored pencil mark will quickly enable him to find the place where he stopped work.

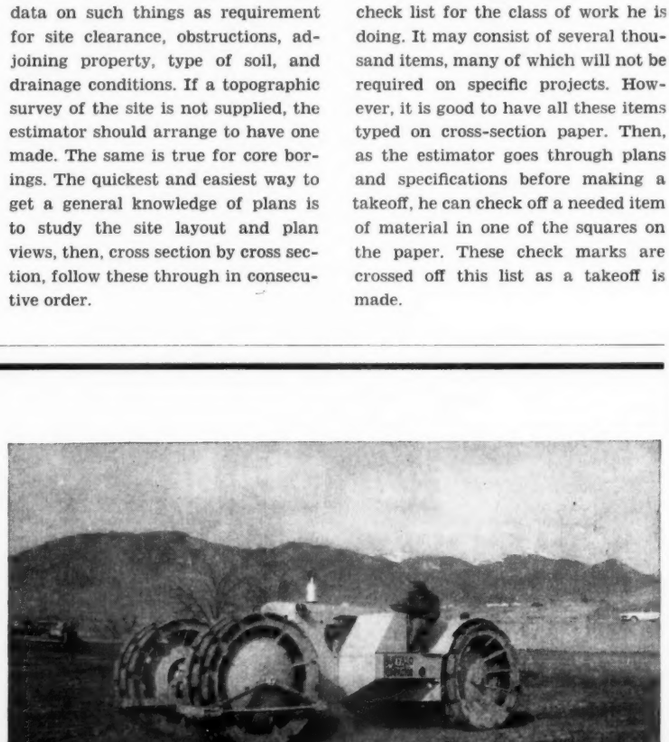
If work is to be subcontracted, the abbreviation "Sub" is written in the labor and material space on the estimate sheet and the contract bids entered in the material column. This practice should be followed because the general contractor expends no direct labor on subcontracted work. The total labor shown on the estimate will therefore represent his own direct labor, on which the labor insurance and workmen's compensation costs are calculated. When this procedure is used, the completed estimate will have items in the same sequence as the check list or cost code, making it a simple matter for actual and figured costs to be compared for the entire job and for individual portions of the job. Many contractors use a printed summary sheet, like the Building Contractor's Estimate-Summary Sheet shown in the chart on page 109 for totaling quantities and prices.

Since estimating is a tedious and painstaking job, the estimator should work in quarters that insure him of maximum privacy. He should also have a modern calculator and a tape-type adding machine.

Much time and error can be saved if the estimator can secure at least one extra set of plans and specifications that can be used by subcontractors and material men in a separate office. If only one set is available, it will be out of the estimator's hands so often that his job will become even more complicated than it is. The extra set of plans should be secured even if the general contractor has to pay for them, for in the long run, it will save money and expedite the work.

Many architects or engineers specify in the invitation to bid that the plans and specifications must not be defaced and must be returned with the bid, but most contractors ignore

Colorado contractor's KOMPACTOR WORKS CLOSE-UP



eliminates all hand tamping costs!

"We're more than satisfied with the close compaction of the K-45," says Domenic Leone, referring to the excellent work the self-propelled K-45 Kompactor is doing on his $1,026,762.25 job on State Highway 1 in El Paso County, Colorado.

Domenic Leone Construction Company, Inc., Trinidad, Colorado, is compacting 1,722,000 cubic yards on 12.726 miles of highway south of Colorado Springs. Included are 6 concrete box culverts, 10′ x 12′, making close compaction a necessity.

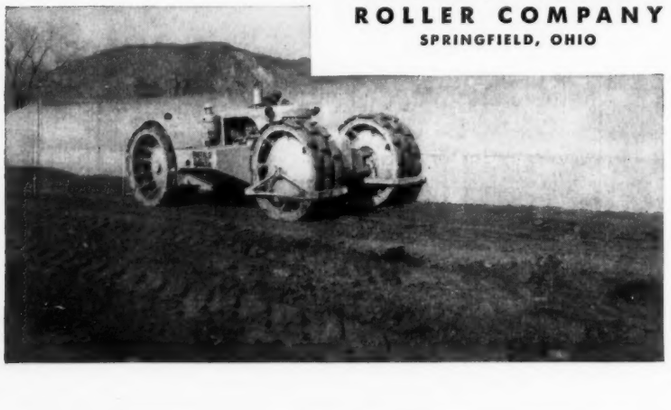
Not only has the highly maneuverable K-45 eliminated hand tamping on culverts . . . it also averages 1100 yards an hour on banked material. Faster speeds, up to 5 mph, and its "interrupted pressure" principle of operation that directs *all* compaction effort downward, enabled Domenic Leone to replace several other pieces of compaction equipment with *one* K-45 Kompactor.

Write today for full information—or see your nearest Buffalo-Springfield distributor.

The Standard *of Comparison*

BUFFALO-SPRINGFIELD ROLLER COMPANY
SPRINGFIELD, OHIO

Here's how close the flexible K-45 can work to culverts and abutments, and it's faster, better, more efficient in the "wide open spaces" too.



For more facts, use Reader-Reply Card opposite page 18 and circle No. 311

this unreasonable request. Contractors are not paid for making an estimate, and the cost of drawings and specifications is small considering the value of a bid to the owner. The contractor should retain the original papers until the work is let. If he gets the job, the estimate set of plans—not a substituted set—forms the basis of the contract.

The project manager or superintendent will often have to make estimates for additions to or deductions from the work, or at least supervise and approve their preparation. Such estimates will have to be prepared in accordance with the contract terms in force, and may be prepared under a lump-sum, unit price, or cost-plus basis. These are generally known as Change Order estimates and are usually accompanied by the Change Order that details and gives authority for the change, together with the cost or credit to the owner.

The odd cents in a price extension should be ignored, as far as the final totals are concerned. They will make little difference in the final total, and omitting them will save time and reduce the possibility of error in computations. A unit price should not be carried to more than two places, unless a large volume of work is involved.

If drawings and specifications are complete, allowances are usually not made for field contingencies or unforeseen hazards involved in the job. Sometimes, an allowance of 5 per cent is made. Work involving remodeling or alterations sometimes is calculated with a contingency of 10 per cent, which is not considered too much for this type of job.

Appraisals should not be confused with the estimate. The latter is a detailed takeoff and breakdown, with each individual item priced. Appraisals are generally made with a Current Cost Index that uses a certain year as a base. Current costs are figured above or below costs for the base year.

After an estimate has been completed, it may be cubed, that is, the cubic content figured and divided into the total estimated cost. This is the cost of the structure per cubic foot. This method provides an approximation of costs and is used a great deal by architects. There is a standard method of cubing a building, which is provided in the American Institute of Architects Document No. 239. If the estimated cost on a cubic-foot basis is far out of line with past or published costs, something is wrong and the estimate is due for a recheck.

Checking the estimate

The only safe practice in estimating is to have every takeoff and estimate checked by someone other than the estimator who did the job. The extent of this check will depend on the contractor's confidence in the estimator, the experience of the estimator, and other factors. A check should always be made on the estimate, however, even if it is not a detailed check. Accurate checking is possible only if the estimator uses a standard form for his work, a form that provides spaces for the entry of dimensions, units, and extensions. If the estimator uses any scrap of paper for calculations, the only way the estimate can be checked is by making a second takeoff.

If there is not enough time for a complete quantity-analysis takeoff that duplicates the work involved in making the original estimate, the checker may use short cuts that serve for checking purposes only.

If the original estimate for concrete work has been taken off so that forms, reinforcing, concrete and other materials are all listed as separate quantities and all are separately priced, the checker may total the cubic yards of concrete needed, then multiply this by the over-all price of concrete per yard. This price would include every cost involved in placing the concrete. The total is then compared to the total figures on the estimate for the same item. This method may be also used for estimating costs of steelwork, the price of steel in pounds per square foot of floor being the price that is multiplied.

If this type of checking is to be used, the estimator would be wise to compile over-all prices for various types of construction, and keep them up to date. This information will be invaluable in making budget estimates and in making checks of completed estimates. Over-all costs for virtually any type of construction may be compiled easily and accurately from historical average costs of work done previously by the contractor. If these figures are not available, the estimator will have to rely on his own experience and judgment, together with what published data is available.

Information on costs has been published in several inexpensive volumes. One is "Building Construction Cost Data", which is published each year by Robert Snow Means, P. O. Box 62,

For more facts, circle No. 312→

Save time and money on low-cost drainage jobs...

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AMBRIDGE Sectional Plate for pipes, arches and pipe-arches meets the specifications of the American Association of State Highway Officials, and can be adapted to all state, railroad and government specifications.

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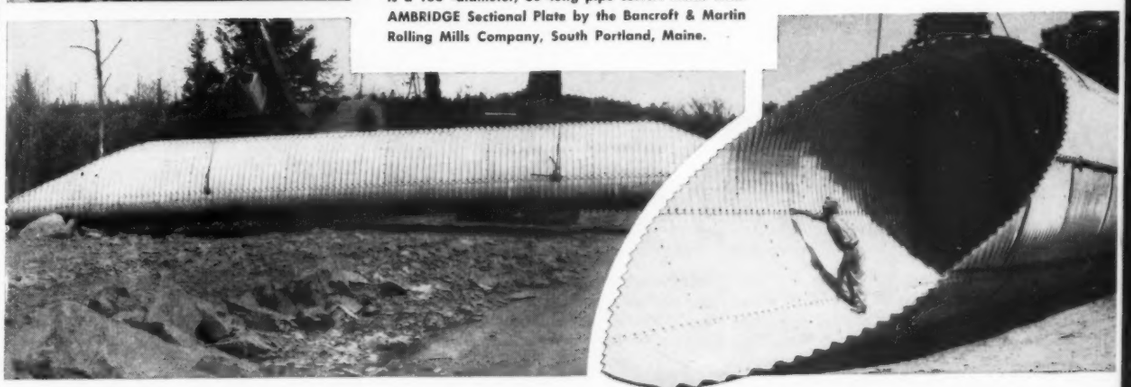
For further information, we suggest that you contact the office nearest you. Or, an inquiry direct to our Pittsburgh headquarters will bring detailed information.

The Harris Brook Bridge, near New Portland, Maine, is a 156"-diameter, 86'-long pipe culvert made from AMBRIDGE Sectional Plate by the Bancroft & Martin Rolling Mills Company, South Portland, Maine.



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UNITED STATES STEEL

Duxbury, Mass., for about $3. This contains current cost data and labor and material prices. It is important to add overhead, profit, contingency allowance, and overtime costs to prices given in this book. Another book is "The Building Estimator's Reference Book", published by Frank R. Walker Co., 173 W. Madison Ave., Chicago, Ill., at $12 per copy. It includes a smaller volume known as the "Vest Pocket Estimator". Walker's handbook breaks unit costs down into various components. Opposite labor and material prices are blank spaces which the estimator can fill in with the local rates for labor and material before he attempts to get a total unit price. "How to Estimate for the Building Trades", by Townsend-Dalzell-McKinney, is published at $4.50 by the American Technical Society of Chicago, 848 E. 58th St., Chicago, and contains good information on estimating, tabular data on quantities, and detail as to material. The unit prices arrived at by calculation are "Bogey" or "Target" costs, which field forces strive to equal or better.

Rough checks

Sometimes, a rough check of estimate figures for houses and office buildings can be made by comparing the estimated price with similar cost breakdowns. This method can only be used on structures of the same class and similar in type and design.

Since the size and shape of a building have a great deal to do with the square-foot and cubic-foot cost, prices of such structures may be high, low, or average. For this reason, per-cubic-foot costs are very rough costs and provide only a very rough check of an estimate. However, such costs are useful in sales. If a prospective customer asks what it would cost to build a factory, the contractor might figure the cubic contents roughly, and multiply this by the average cost per cubic foot. This would give the designer leeway between the costs of low-priced factories and high-priced factories so that the design would come within the estimated cost.

The best use of cubic-foot and square-foot costs are their application to standard buildings. In recent years, several manufacturers have produced standard types of steel framing that can be shipped knocked down. As these units are all of standard design and specification, the square-foot and cubic-foot costs can be calculated for floor areas of different size with a high degree of accuracy. The Deatherage firm has developed standard warehouse types of steel and concrete block construction, varying from 5,000 to 10,000 square feet in floor area. This gives the customer a masonry wall building with a gypsum roof deck and steel frame for the same or less money per square foot of usable space as a steel frame with a metal skin. The price of the standardized structure decreases as its size increases, the price being about $3.50 per square foot for a 100,000-foot building and about $5 per square foot for a 5,000-foot building. Each size building is estimated separately, and the square-foot and cubic-foot prices are used as sales figures or estimate checks.

The methods used to check estimates can be used to check prices submitted by a subcontractor. These prices have to be checked so that the contractor can determine whether or not it will be profitable to sub the work. However, subs operate on a higher profit margin, and this must be figured into their prices.

Many architects and engineers send out addendums to specifications at the last moment, and these may be overlooked when estimates and bids are prepared. It is a good practice to staple these addendums to the original specification as soon as they are received. A last check should be made with the architect or engineer before the proposal is typed, to make sure that all addendums have been received. In any case, the number of addendums received should be noted on the proposal so that the contractor will not be committed to those that have not been received.

(Next month's article will deal with "The engineering department — Estimating job overhead.")

Motor grader hints

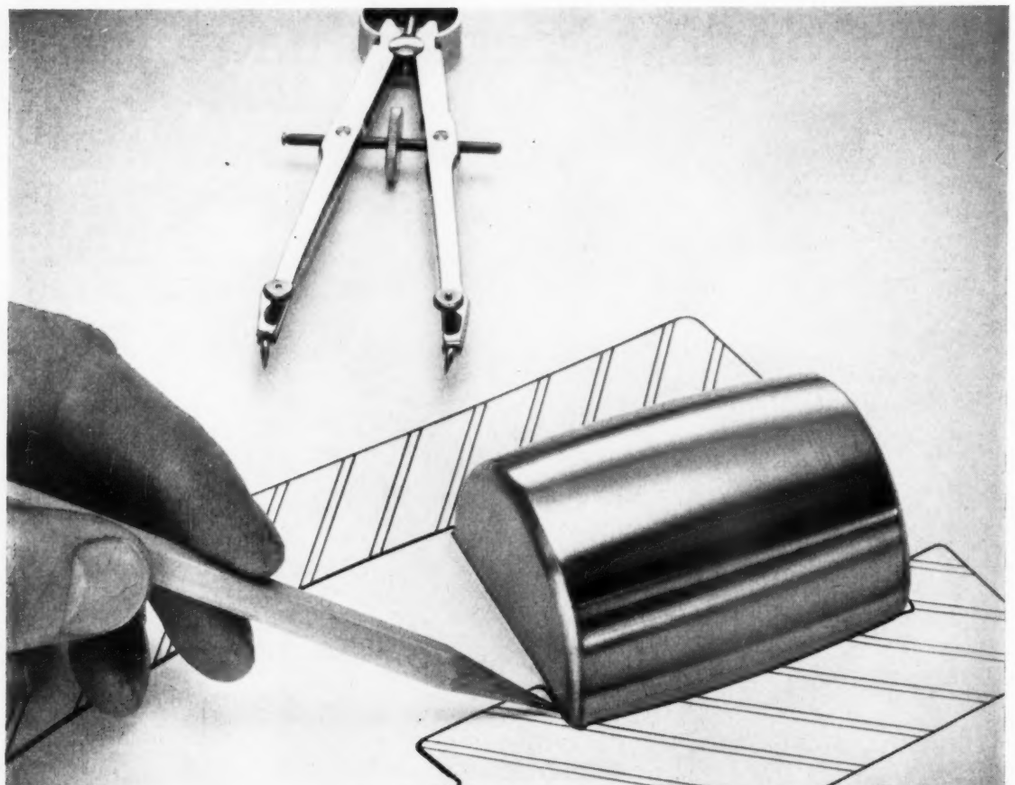
■ What to look for in buying a motor grader is discussed in a booklet from Caterpillar. Topics treated are the question of hydraulic or mechanical control, circle side-shift, crank or curved-rack type, operator convenience and visibility, and long or short shafts. Operating cost without depreciation is analyzed. The bulletin is also available in Spanish, French, and Portuguese editions.

To obtain Form No. 31902 write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 141.

New Euclid representative

L. H. Brannian has been appointed a district sales representative of the Euclid Division of General Motors Corp., Cleveland, Ohio, manufacturer of earthmoving equipment. He will cover North and South Dakota and the province of Manitoba, Canada. His headquarters will be in Fargo, N. Dak.

TORRINGTON *SPHERICAL ROLLER* BEARINGS



What a difference *conformity* makes!

TORRINGTON SPHERICAL ROLLER BEARINGS have the right degree of conformity between rollers and races and between roller ends and the center guide flange. "Skewing" is eliminated and rollers operate with a minimum of friction. This means even load distribution and long, low-maintenance service.

Because of their excellent performance in heavy-duty application, Torrington Spherical Roller Bearings have won wide acceptance in rock crushers, cranes, paper machinery, drilling rigs, presses—wherever high load capacity is required under conditions of misalignment.

Torrington Spherical Roller Bearings are available with either straight or tapered bore, for shaft or adapter mounting. And Torrington engineers have wide experience in custom-building bearings for special applications. Whenever you need bearings, call on TORRINGTON.

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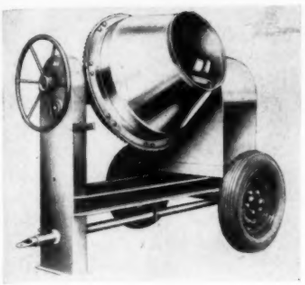


Mixer series features lighter, stronger bowl

■ The Supermix series of concrete mixers for contractors and builders is announced by the Speedmatic Research & Equipment Corp., a division of the Porter-Cable Machine Co. The new line permits production of the highest quality concrete at low cost and with only routine maintenance, according to the manufacturer.

All mixers in the Supermix series have a pressed-steel mixing bowl which is lighter and stronger than cast iron bowls. The bearing surfaces on the heavy yoke are fully machined. The yoke is supported at both ends in sealed bearings which are carried in spherical self-aligning housings.

The Model 35G in the Supermix series is powered by a 2½-hp, air-cooled gasoline engine with built-in reduction running in oil. A chain drive with steel sprockets handles the mixing operation. The mixer may also be powered by a 1-hp, 110 or 220-volt, single-phase, 60-cycle, heavy-duty electric motor; a 3½-hp gasoline engine; or a 2-hp, water-cooled gasoline engine. The capacity of the mixer is in excess of 3½ cubic feet.

For further information write to the Speedmatic Research & Equipment Corp., 10 Port St., Pulaski, N. Y., or use the Request Card at page 18. Circle No. 58.

Protective equipment

■ A complete line of protective equipment for the eyes, face, and head is presented in a catalog from the American Optical Co. Pictured and described are various types of safety glasses and goggles. Also included in the catalog are welding face shields and helmets, absorbent sweatbands, ladder shoes, and other health and safety items.

To obtain the catalog write to American Optical Co., Safety Products Div., Southbridge, Mass., or use the Request Card at page 18. Circle No. 162.

Hose fittings

■ Steel, malleable iron, and bronze air-hose couplings, clamps, nipples, and valves are described in a bulletin from the Hose Accessories Co. Data is given on the design, application, and features of each piece of equipment. Information is included on size, part number, and weight.

To obtain Bulletin No. 110 write to Le-Hi Division, Hose Accessories Co., Lehigh Ave. and 17th St., Philadelphia 32, Pa., or use the Request Card at page 18. Circle No. 82.

Barricade unit added to control traffic

■ The new Jumbo barricade, available from the Interstate Rubber Products Corp., consists of a 24-inch-square Jumbo base and a 36-inch Jumbo adapter sign, combined with the standard 28-inch Trafficone barricade cone. The base slips over and interlocks with the Trafficone to make an integrated unit. Two such base-cone units support the adapter sign, creating a barricade easily seen by motorists.

A single Jumbo base and barricade cone can also be used with a 12-inch adapter sign in windy areas. The high stability factor of the 9-pound Jumbo base allows the base-cone unit to withstand wind velocities up to 60 mph, the manufacturer reports.

The Interstate Rubber Products Corp.'s Jumbo barricade unit.

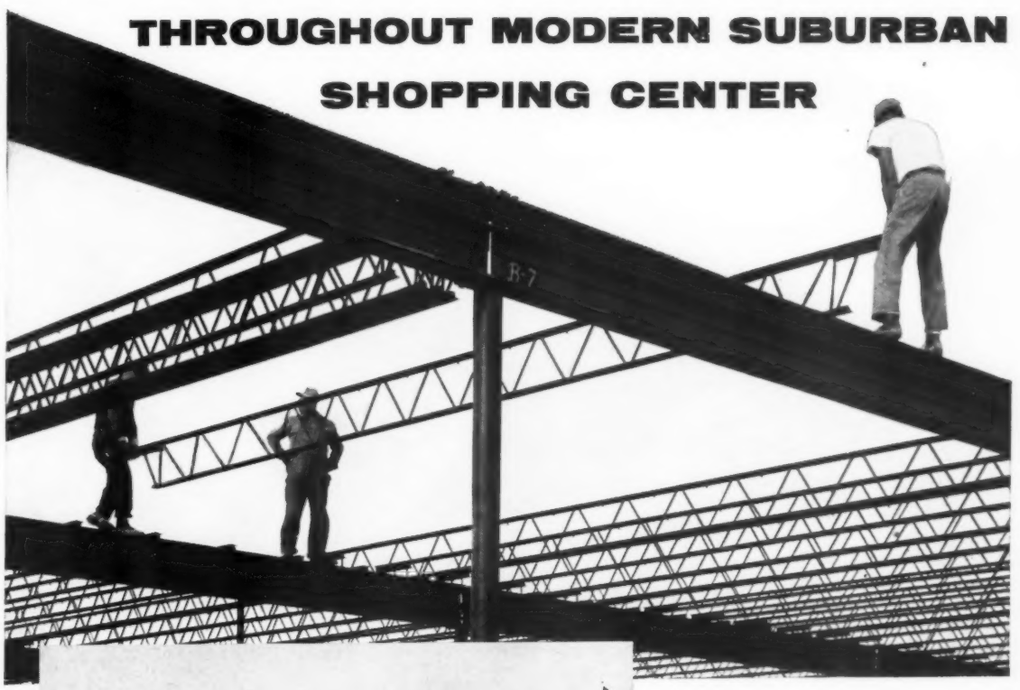
The Trafficone is a cone-shaped, resilient rubber unit with a square base. It is available in 12, 18, and 28-inch heights and is used to establish temporary lanes to guide, direct, or control all types of vehicular traffic. To create an emergency barricade, the tallest Trafficones can be set around construction or repair work such as excavations or asphalt paving.

For further information write to the Interstate Rubber Products Corp., Dept. R1, 908 Avila St., Los Angeles 12, Calif., or use the Request Card at page 18. Circle No. 105.

Hyster Co. appoints

Sam D. McKinney has joined the sales promotion department of the Hyster Co., Portland, Oreg., manufacturer of cranes and winches. He will work on all phases of the firm's sales-training program.

LACLEDE CONSTRUCTION STEEL USED THROUGHOUT MODERN SUBURBAN SHOPPING CENTER



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Laclede construction steels of virtually every type were used throughout this modern development: straight chord steel joists, Multi-Rib reinforcing bars, welded wire fabric, spirals, pipe, form and tie wire, conduit and electrical metallic tubing.

For The Best In Construction Steels . . . Specify Laclede

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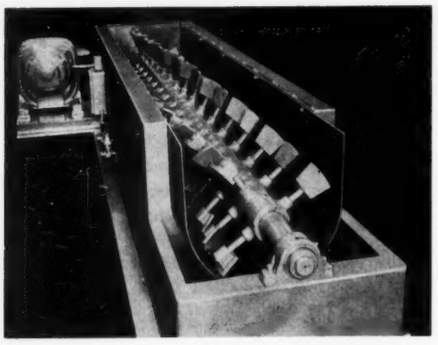

The Gasmaco continuous mixer handles any size material from dust to 1½ inches.

Continuous mixer handles up to 1½-inch material

■ A new line of continuous mixers and pugmills is now available from The Gas Machinery Co. The Gasmaco mixers will handle any size material up to 1½ inches, either dry or in a slurry.

Features of the mixers include all-welded frame of heavy steel plate; standard, heavy gage, replaceable mixer trough; box-type construction that eliminates dirt-catching framework; a safety guard over the mixing portion of the trough; a simplified drive mechanism with a standard NEMA frame motor; and expansion-type roller bearings for shaft support.

A diversion plate at the mixer discharge keeps segregation to a minimum. The drive mechanism may be located on either side of the trough or in line with the trough axis.

For further information write to The Gas Machinery Co., 16100 Waterloo Road, Cleveland 10, Ohio, or use the Request Card at page 18. Circle No. 59.

Join and serve—the Red Cross.

New channel bridging snap-lock into place

■ Steel-X, a new channel bridging of 20-gage galvanized steel that provides lateral support for joints, can be snap-locked in place by hand without the cutting, sawing, or nailing required with wood bridging, according to Taber, Bushnell, & Co., Inc. The manufacturer reports that Steel-X

A typical Steel-X channel bridging installation shows each pair of braces forming a set or "X".

can be installed five times faster than wood bridging, with savings in installation costs of up to 80 per cent.

Steel-X may be installed after capping and the plumber, heating contractor, and electrician have completed their jobs. It is manufactured with 16 sharp anchor spurs per set. These bite into wood joists when installed, and dig deeper into the wood as the frame settles, making the union stronger. Only one size of Steel-X is needed for stock, because it is adjustable to various lengths.

Two braces, forming a set, or "X", can be removed and reinstalled by hand if alterations are desired after bridging is in. Lateral ribbing of the formed channels increases the strength of the bridging. The galvanized construction makes the units corrosion-resistant.

For further information write to Taber, Bushnell & Co., Inc., 1112 Metropolitan Bldg., Minneapolis, Minn., or use the Request Card at page 18. Circle No. 103.

Murray Construction Co., Waverly, Ohio, specified torque converter drive for this new Allis-Chalmers HD-16. A-C Torque Converter Drive, which is optional on the HD-16 and standard on the HD-21, incorporates Twin Disc Torque Converter components as standard equipment.
Torque Converter Tractors do more work, faster . . . Last Longer!

Two people who should know—both owner and operator of an Allis-Chalmers HD-16C torque converter tractor—unanimously agree that a torque converter crawler *works faster, works longer, lasts longer and produces more.*

As Robert Murray, co-owner of Murray Construction Co., Waverly, Ohio, puts it, "Our new HD-16 tractor is a speedy worker and the torque converter is one of the primary reasons. We also find we haul more yardage for each dollar spent."

Operator Kenneth Austin adds, "Our former tractor would stall loading rock like we encounter on this job, but the '16' goes right through. The torque converter saves clutching and makes it a lot easier for me. At the end of a day's work I'm not nearly as tired."

Murray's HD-16 is used for dozing and for pulling a scraper in rock-like shale—in the relocation of route 73, northwest of Peebles, Ohio. On one stretch of road, fill being hauled 1200 ft. by the 150 hp crawler and a 15-yd. scraper, will raise the highway grade where it crosses a valley.

Torque converter drive offers you *higher work output in less time, and longer equipment life* because it *automatically* matches power to load demand, thus minimizing or eliminating gear shifting . . . it eliminates harmful engine lugging and stalling . . . it cushions *out*—through *fluid* connection—overloads, shock loads and vibrations—providing *longer tractor life* with *less maintenance.*

For these reasons, Allis-Chalmers designed torque converter drive into their HD-16 and HD-21* Crawler Tractors. Since 1940, they have worked closely with Twin Disc Engineers, and have standardized on Twin Disc Torque Converter components.

Specify a torque converter for *your* next Allis-Chalmers HD-16! See your tractor dealer today, for complete information on A-C Torque Converter Drive.

*Torque Converter Drive is standard equipment on the HD-21.

TWIN DISC
Torque Converters

TWIN DISC CLUTCH COMPANY, Racine, Wisconsin (Hydraulic Division) Rockford, Illinois

For more facts, use Reader-Reply Card opposite page 18 and circle No. 315

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Road Builders—It's Sensational! !

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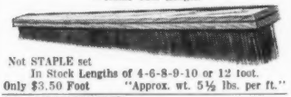
Steel Wire Road Drag Leveler. Six (6) Inches Wide —Name Your Length



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In Stock Lengths of 4-6-8-9-10 or 12 foot.
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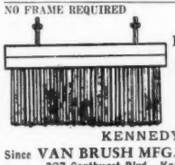
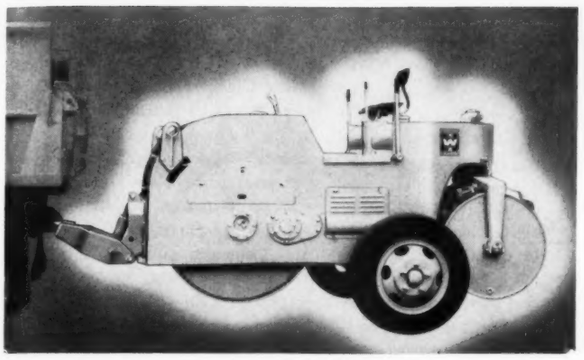


The LITTLE PECKERWOOD
3" Wide, 15" Length
This Fits Your Frame
NOTE—Both Drags Can Be Furnished with Fibre.
Only $2.50 Ea.

KENNEDY'S
Since VAN BRUSH MFG. CO., INC. 1928
327 Southwest Blvd., Kansas City, Mo.

For more facts, circle No. 316



The new Huber-Warco 3 to 5-ton tandem roller may be converted from working to towing position in a few minutes.

Towing attachment fits new 3 to 5-ton roller

■ A towing attachment for its new 3 to 5-ton tandem roller is being offered by the Huber-Warco Co. The attachment is supplied either mounted on the roller or as a separate item. It consists of a towing hitch with a built-in hydraulic jack, axle and wheel assemblies, and axle carriers for both working and towing positions.

With the attachment, the Huber-Warco 3 to 5-ton tandem can be converted to a highly portable unit for quick movement from job to job. The changeover from working to transport position and back takes only a few minutes.

Features of the attachment include 7.50×20 pneumatic tires, wheels mounted on tapered roller bearings, and an 8-inch vertical adjustment at the hitch to provide a level travel position for the roller. A power hydraulic jack in the hitch assembly is optional.

For further information write to the Huber-Warco Co., 202 N. Greenwood St., Marion, Ohio, or use the Request Card at page 18. Circle No. 27.

"He calls it preventive maintenance. . . ."

DUDGEON HYDRAULIC JACKS

SALES RENTALS

CAPACITY TO 600 TONS

FOR:
PILE TESTING
•
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DESIGNERS and MANUFACTURERS OF

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RICHARD DUDGEON INC. EST. 1850

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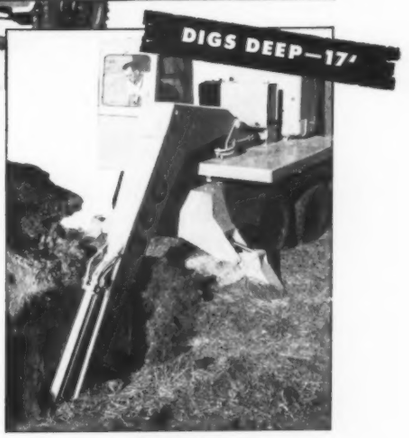
NEW 360 HALF-YARD HOPTO

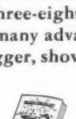
DIGGER • SHOVEL • CRANE



Here's the completely hydraulic *mobile* shovel that equips you to do more jobs with lower equipment investment . . . *at greater profit!*

The 360 HOPTO swings three hundred and sixty degrees from its over-the-cab travel position. Operator's cab swings with unit for face-forward, *safe* operation. Feather-touch controls actuate every movement from positioning of outriggers to fast-cycling swing and 180° tilt of bucket! Heavy-duty hydraulic system with built-in relief valves gives an easily managed, oil-cushioned, 20 ton force to dipper stick!!!

Interchangeable backhoes and shovel buckets have H and L replaceable teeth and are available in three-eighths and one-half yard sizes. Check *NOW* on the many advantages of owning this work-hungry, mobile digger, shovel, crane!



Write today for complete information on the '360' or any one of six quarter-yard HOPTO Models!

BADGER MACHINE CO.

DEPT. E • WINONA, MINNESOTA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 318

manufacturer memos

Carl B. Rolf, newly elected executive vice president of Pioneer Engineering Works, Inc.

Pioneer elects Rolf executive vice president

The first vice president of Pioneer Engineering Works, Inc., Minneapolis, Minn., Carl R. Rolf, has been elected executive vice president of the firm, a subsidiary of Poor & Co., Chicago. At the same time, Roy L. Slama was named comptroller of the company.

Rolf, in more than 25 years with Pioneer, has served as salesman, assistant sales manager, sales manager, and vice president in charge of sales. Slama came to Pioneer in 1950 from Poor & Co., and has served as assistant secretary and assistant treasurer since that time. He still retains the post of assistant treasurer for the firm.

Executive changes made by Hercules

Newly elected as a vice president and member of the executive committee of Hercules Powder Co., Wilmington, Del., is Paul Mayfield. General manager of the Naval Stores Department since 1951, and a member of the board of directors since 1952, Mayfield has been with the firm 31 years.

Three other changes in executive personnel have been made by Hercules. J. B. Johnson has resigned from the executive committee, but will continue as a vice president and a member of the firm's board of directors. C. Fred Hogg has been made general manager of the Naval Stores Department, succeeding Mayfield.

Armco appoints four

Armco Drainage & Metal Products, Inc., Middletown, Ohio, has appointed three men to managerial positions in field posts. C. A. McTaggart has been named manager of the northwestern division, which covers the Dakotas, Minnesota, and Montana. Now sales manager of the division, McTaggart succeeds E. A. Roberts, who has retired.

Taking over as northwestern sales manager is James Sampson. He had formerly been associated with the firm's Pennsylvania office.

Robert M. Clementson, formerly of the New York office, has been named sales manager in Pennsylvania.

George E. Shafer was named vice president in charge of engineering, and will supervise the development of new products and improvement of those already existing. He was formerly the firm's chief engineer.

Yuba names vice president

The new vice president and general manager of the Yuba Mfg. Co., producer of placer dredges, is W. P. Blanchard. Formerly secretary and treasurer of the firm, Blanchard will direct operations of the company's two divisions, C&D Movall in Perkins, Calif., and Stockton Iron Works at Stockton, Calif., in addition to directing operations at the Yuba plant.

He will make his headquarters at Benicia, Calif.

Garrett names executive

The Garrett Corp., Los Angeles, Calif., has appointed Harry H. Wetzel, Jr., to the post of assistant to the president. With the firm since 1946, when he joined the AiResearch Mfg. division, Wetzel was assistant manager of the division's Phoenix, Ariz., office.

Littleford adds to staff of new research center

William T. Camm has been made chief of the design and development department, and T. J. Grueter, design and development engineer, for the new Research and Development Center for blacktop road construction and maintenance equipment organized by Littleford Bros., Inc., Cincinnati, Ohio. Both men will direct work in the new center, which has been designed for testing, demonstrating, and developing new machinery for work with black top pavements.

A-C appoints managers of foreign territories

The Tractor Group of Allis-Chalmers Mfg. Co., Milwaukee, Wis., has assigned managers to two foreign territories. Clyde Crozier has been appointed European territory manager, succeeding Myron W. Rhoten, who has become managing director of Allis-Chalmers Great Britain, Ltd., Essendine, England.

Crozier, with the firm since 1941, has served as manager in the export service department, in charge of special sales and service assignments.

Now heading the territory of Africa and the Middle East is John Feustel, who is the first to hold the post. Feustel has also served in the export department.

CP rotary compressors...

deadline meeters

Pick any CP "Power Vane" Rotary—from the 125 cu. ft. model up to the 900 cu. ft. model and they have one operating characteristic in common. They take rough, continuous duty in their stride. Work on grades . . . require a minimum of service and attention. Contractors can count on Chicago Pneumatic "Power Vane" Rotaries for the kind of air supply that gets tough jobs done ahead of deadlines. For more complete information, see your Chicago Pneumatic equipment distributor. *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, New York.*

S. J. Moran, left, newly appointed vice president and general manager of foundry and mill-machinery operations for Blaw-Knox Co., and E. C. Rook, new vice president and general manager of fabricated products operations.

Blaw-Knox appoints

As part of its integration of manufacturing facilities, Blaw-Knox Co., Pittsburgh, Pa., has appointed two new vice presidents. S. J. Moran has been named vice president and general manager of foundry and mill-machinery operations, and E. C. Rook is the new vice president and general manager of fabricated products operations.

W. C. Berg has been promoted to the post of assistant to the vice president and general sales manager. Berg has been with the firm since 1952.

Eight new officers of the sales department of the construction equipment division have been elected. L. H. DeVilling has been named sales manager of the division. He had been assistant to the sales manager.

The new product manager for bins, batchers, and buckets is Raymond E. Hoppenrath, the former sales engineer. H. C. Peters has been named product manager for truck mixers, while John Bunder was elected to a similar post for concrete-paving equipment. The third new product manager, James H. Cougler, will handle bituminous equipment.

Heading the division's new department, customer order service, is Anthony S. Wolf. The parts and service department will be directed by C. W. McIntyre, a Blaw-Knox employee since 1917.

George Moritz has been elected assistant to the sales manager and will be in charge of advertising and sales promotion.

The new supervisor of export sales is Paul J. Wolfert, who will study an expansion of the firm's export activities. C. M. O'Donnell has been named assistant manager of the grating department, in charge of bridge decking.

American Hoist promotes engineering personnel

Eight members of the engineering department of American Hoist & Derrick Co., St. Paul, Minn., have been promoted to new positions.

J. J. Hite, former chief engineer, has been appointed director of engineering for all American Hoist products. His former assistant, William Niessen, has been named chief structural engineer. The new chief mechanical engineer, formerly an assistant chief engineer, is Kenneth Potter.

H. T. Bratt has been named chief engineer in charge of revolver cranes, derricks, and hoists. He had been a supervisor at the time of his appointment. Two assistant chief engineers, R. G. Lynn and A. W. Brown, have been named to handle electrical applications, and excavators and truck cranes, respectively.

Charles Milnar has been named mechanical engineer in charge of locomotive cranes; while R. D. Adkins has been appointed mechanical engineer for the firm's newly-formed Crosby-Laughlin Division. Percy S. Gough will serve as sales manager.

Caterpillar names head of southwest division

William E. McCoy has been appointed sales manager of the southwest division of Caterpillar Tractor Co., Peoria, Ill., He will make his headquarters in San Francisco, Calif. With Caterpillar since 1939, McCoy was formerly eastern sales division manager.

American Bridge Division appoints new president

The American Bridge Division of United States Steel Corp., Pittsburgh, Pa., has appointed Austin J. Paddock to the position of president of the organization. Joining the firm in 1926 as an engineer, Paddock was vice president in charge of contracting at the time of his appointment.

He succeeds Norman B. Obbard, who has been made assistant executive vice president of operations.

Thew appoints Turk

Carrol G. Turk has joined the Thew Shovel Co., Lorain, Ohio, to serve as coordinator of staff functions between the engineering and service departments. A graduate engineer of the University of Missouri, Turk was vice president in charge of engineering and production for the Martin Machine Co., Kewanee, Ill., before coming to Thew, manufacturer of Lorain power cranes and shovels.

Aeroil names manager

Aeroil Products Co., Inc., South Hackensack, N. J., manufacturer of asphalt-paving equipment, has appointed Charles E. Klevies to the post of regional manager in the firm's western division.

He will make his headquarters at 3217 Union Pacific Ave., Los Angeles, Calif.

...and beaters!

A gang of 600 cu. ft. "Power Vane" CP Rotaries supplies air for drilling operations on a section of the New England Thruway.

This 900 cu. ft. CP Rotary supplies air at 100 lbs. for smooth, efficient operation of the Vulcan 50C differential pile hammer driving 180 ft. piles.

Here's a 365 cu. ft. Rotary Compressor keeping ahead of the air needs of a pair of continuously running G-150 Wagon Drills and their 3-inch Drifters.

For lighter air requirements and maximum maneuverability, this two wheel unit can't be beaten. Available in 125 and 210 cu. ft. models it's ideal for getting on the job and getting it done fast.

Chicago Pneumatic

PNEUMATIC TOOLS • AIR COMPRESSORS • ELECTRIC TOOLS • DIESEL ENGINES • ROCK DRILLS • HYDRAULIC TOOLS • VACUUM PUMPS • AVIATION ACCESSORIES

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A Buckeye trencher excavates a trench 33 inches wide and 12 inches deep beside the old 20-foot concrete pavement which is to be widened 2 feet on each side. Payne & Dolan, Inc., Chicago, Ill., is the contractor on this 11-mile section of road. *C&E Staff Photos*

Rock base and binder widen narrow roadways

Lips curbs are eliminated as 180 miles of highways are resurfaced with bituminous binder and wearing course

Pavements 20 feet wide were widened to 24 feet, lip curves were eliminated, and the superelevation of curves was improved last summer by a series of contracts on 180 miles of Missouri highways.

In general, the widening consisted of compacted crushed-rock base and bituminous binder placed in a trench beside the old concrete slab. The old pavement was then resurfaced with sufficient bituminous binder to cover the lip curbs, and a bituminous wearing course was placed over the complete widened roadway. There were variations in the type of base material placed on some of the projects and differences in the equipment used; but, in general, the jobs done by the several contractors were very similar.

Preparing and placing the base material was well illustrated on an 11-mile section of Route U. S. 50 east of Jefferson City, a section built by Payne & Dolan, Inc., Chicago, Ill. The widening began with the excavation of a trench 33 inches wide and 12

UNIT MODEL 510

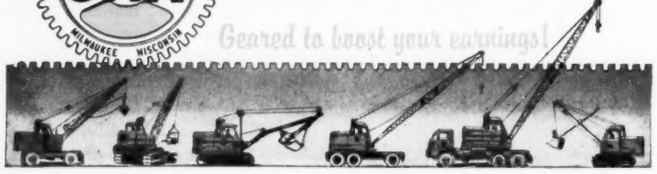
THE NEW UNIT *Challenger* . . . as a DRAGLINE

NOTHING BUT THE BEST! There's no substitute in the ⅜-yard excavator field for EXPERIENCE. UNIT has it! UNIT knows what you need in a ⅜-yard machine . . . knows how to engineer the power, over-all performance-superiority and economy of operation for the jobs you want to do **profitably** with a ⅜-yard dragline, clamshell, crane or trenchoe. The New UNIT CHALLENGER proves this with such features as: **Self-aligning Hook Shoes . . . Force Feed Lubrication . . . Full Floating Trunnion-Mounted Tapered Drums . . . Torque Converter, etc.**

See the many other new features illustrated and described in UNIT CHALLENGER Bulletin C-800. Write for your copy of this bulletin.

UNIT CRANE & SHOVEL CORP.
6309 W. Burnham St. • Milwaukee 14, Wis., U.S.A.

Geared to boost your earnings!



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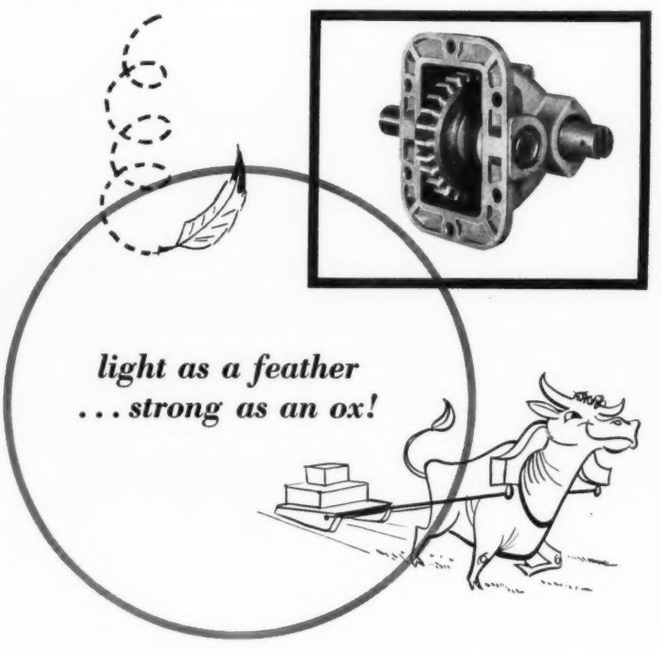

THE *NEW TULSA*® POWER TAKE-OFF

SINGLE SPEED • MEDIUM DUTY

Extremely light . . . you can hold it in the palm of your hand . . . because the NEW TULSA Power Take-Off has a die-cast aluminum housing which at the same time gives all the ruggedness and durability for which the TULSA line is famous around the world. Output shaft available in three sizes—13/16″, 7/8″ and 15/16″—and rotates on two needle bearings. Furnished with either cable or lever control to suit individual operators' requirements. Designed and built for the full range of medium duty work, this new power take-off offers the extra advantage of low price, nationwide distribution and service that have made the TULSA line a favorite everywhere.

Tulsa Winch
TULSA, OKLAHOMA DIVISION OF VICKERS Inc.

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Crushed rock base material is placed in a widening trench on this section by a Blaw-Knox Apsco spreader. Graded from 1-inch down with a relatively high volume of fines, the material is pre-wet before it is placed.

Reno Construction Co., Overland Park, Kans., uses a Blaw-Knox finishing machine to lay two 1½-inch courses of bituminous binder over the old concrete slab. A 1¼-inch wearing course will then be placed over the 24-foot widened roadway.

inches deep on each side of the existing pavement. Two 4-inch courses of compacted rock base and two 2-inch courses of bituminous binder brought the widening strip up to pavement grade. A binder course over the old concrete slab and a wearing course over the entire roadway completed the job.

Payne & Dolan used a Buckeye trencher to excavate the trench beside the old pavement. The rubber-tire machine rode on the pavement. Its wheel-type unit dug the complete trench in a single pass, in spite of the loose rock in the shoulder material.

Rock base is pre-wet

Hall & Riley Quarries, Boonville, Mo., supplied crushed-rock base material for this project from a quarry located near the highway. Crusher-run material from the plant was combined with about 20 per cent additional fines to obtain the gradation desired for the base material. This dry material, with a maximum size of 1 inch, was delivered to the contractor's bin at the quarry.

To add the moisture necessary for compaction, Payne & Dolan set up auxiliary equipment in the quarry. A Barber-Greene conveyor belt, 18 inches wide and 30 feet long, carried the crushed rock from the bin to trucks, and as the rock passed off the end of the conveyor, it was sprayed with water piped from a nearby tank. Since no adequate water supply was available at the quarry, the contractor mounted a 5,000-gallon tank at a high point so that it could feed the conveyor by gravity. The storage tank was supplied by three tank trucks hauling from the Gasconade River.

The amount of water added to the rock was regulated by a valve at the outlet of the storage tank. Usually, the addition of about 10 per cent by weight was required to obtain optimum moisture content when the material reached the road. Since the conveyor was stopped between truckloads, a workman had to be stationed at the valve to adjust it to the conveyor operation.

Moisture was not well enough dis-

CAL-TIE® WIRE
in the handy reel dispenser

...Safe

Tying reinforcing bars with Cal-Tie Wire on the convenient reel dispenser is safer than the old-fashioned shoulder coil. There's no awkward coil to catch on protruding objects...no danger of eye injuries...no scratches on neck and ears...and Cal-Tie's unusually smooth surface makes tying easier.

...Economical

Cal-Tie Wire gives more ties per pound. That's because workers can cut the desired length they need... when they need it...don't have to clip off long, useless wire ends after each tie. They can perform other duties without discarding their partially-used supply of tie wire.

Your nearby CF&I representative will be happy to give you complete details on this safe, economical and modern way to tie rebars, etc. Why not see him soon?

CF&I CAL-TIE WIRE

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver
El Paso • Ft. Worth • Houston • Lincoln (Neb.) • Oklahoma City • Phoenix • Pueblo • Salt Lake City • Wichita
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4244

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CALWELD BUCKET TYPE EARTH DRILLS

Foundations go in faster, easier when you drill belled footings and pier holes with Calweld Earth Drills. No expensive hand labor is needed with these bucket-type drills—all drilling, hoisting and dumping operations are performed mechanically.

Calweld Earth Drills bore 16" to 84" holes as deep as 200 feet. They remove the earth with each pass... they bell out the bottoms with a belling bucket attachment... make manual digging obsolete.

These field reports show how Calweld Earth Drills perform on the job:

- In one hour—two belled caissons (24" dia. by 21') with 72" bells.
- In 10 hours—33 caisson pier holes (16" dia. by 20') with 30" bells.
- In one day—four pier holes (24" dia. by 60') with 72" belled footings.

Get full information on these highly mobile and maneuverable earth drills. Write today for literature and on-the-job performance reports.

CALWELD, INC., 7222 EAST SLAUSON, LOS ANGELES, CALIFORNIA

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A final compaction pass to iron out all irregularities is applied by a Buffalo-Springfield 3-wheel 10-ton tandem roller on the Reno job. Normal traffic proceeded through the area during all phases of the job. *C&E Staff Photo*

(Continued from preceding page)

persed for the material to be used immediately after coming from the conveyor. Since there was no practical means of manipulating the material in the narrow trench on the roadway, wet rock was stockpiled for four or five hours before it was used in order that the water might be thoroughly dispersed.

The trucks taking the material from the conveyor dumped in a series of small stockpiles around the quarry site. Once the water was completely dispersed through the rock, the material was reloaded into a fleet of trucks by an Allis-Chalmers HD-9 tractor equipped with a 2-yard Tractoloader, hauled to the road, and dumped into the hopper of an Apsco spreader, which placed it in the trench beside the pavement.

As the spreader deposited the rock in the trench, it struck off the course at the proper level to provide a four-inch compacted layer of base. Two Buffalo-Springfield trench rollers then compacted the course to a density of at least 95 per cent Proctor. Asphaltic-concrete resurfacing was done with a Blaw-Knox finisher. This unit built up the widening strip from a maximum of 33 inches of stone and 33 inches of 4-inch-thick asphaltic concrete. Binder and surface courses of asphalt were tapered from 27 to 24 inches at final grade.

Since normal traffic was carried through the jobs during all phases of the construction, it was especially important to provide sufficient and adequate warning devices at all dangerous places. During the excavation and base operations, the trench immediately adjacent to the pavement was hazardous at night. To warn drivers of the dangers, the contractor used Flasher Flares, battery-operated warning lights manufactured by Flasher Electronic Corp. of Los Angeles, Calif.

Supplied under a rental-service contract by Flash R Lite Co., Kansas City, Mo., the flashers, mounted on small barricades, operated continuously day and night. The rental agreement provided for servicing by the Flash R Lite Co., so the contractor had only to position the barricades and flashers and move them as necessary.

Test asphalt-stabilized base

On an adjacent 18.8-mile section of the same highway, Peter Kiewit Sons' Co., Omaha, Nebr., conducted a somewhat similar operation. Three types of base material were used on test sections of this segment and will be studied in future years. In building the stabilized rock base on part of the project, Kiewit used the same methods as Payne & Dolan. A 4-mile section was built with 10 inches of rock base stabilized with about 4½ per cent of asphalt. Still another 10-mile section was built up of 9 or 10 inches of bituminous binder applied in 2-inch lifts.

Trenching on the Kiewit job was done by two Caterpillar No. 12 motor graders, one of which was fitted with a special shop-built blade attachment. It consisted of a short section of old moldboard bolted to the center of the grader's standard moldboard. The outer edge of the grader's moldboard was fitted with a standard piece of cutting edge to carry the excavated material away from the trench. The inner edge of the blade carried a piece of worn grader blade which rode on the edge of the pavement to control the depth of the final cut.

The complete trench was excavated with this machine in two to four passes, depending on the nature of the soil and the required depth of the trench. The second grader was used almost exclusively to pull the one with the special blade since it could not develop enough power or traction by itself. In this operation, the graders traveled with the wheels on one side

Amsco Backhoe Buckets **WORK-HARDEN IN SERVICE**

One-piece castings of extra-tough manganese steel give maximum impact and abrasion resistance

Impact work-hardens manganese steel to as high as 550 BHN. Further abrasion only polishes this tough steel. That's why Amsco® manganese steel outlasts other steels by as much as ten to one, under heavy impact and abrasion.

An Amsco Backhoe Bucket is a tough, *one-piece* manganese steel casting. This one-piece body eliminates the danger which fabricated-bucket users face of the hoe bucket breaking up when digging in rock or rough operations. The teeth on Amsco hoe buckets are reversible and renewable, and side cutters can be bolted on to order.

On scores of tough digging jobs, you'll find these Amsco buckets cutting a full swath, unloading cleanly and providing maximum digging efficiency.

Available in both standard and special styles, in all regular sizes from ¾-yard to 1½-yard capacity. For full information, call your nearby Amsco representative or your shovel manufacturer's dealer.

AMERICAN Brake Shoe COMPANY

AMSCO

American Manganese Steel Division • Chicago Heights, Ill.

OTHER PLANTS IN: DENVER, LOS ANGELES, NEW CASTLE DEL., OAKLAND, CAL., ST. LOUIS, JOLIETTE QUEBEC

For more facts, use Reader-Reply Card opposite page 18 and circle No. 325

on the pavement and the others out on the shoulder.

Base material for all types was placed by a Blaw-Knox Apsco spreader. The 8-inch crushed rock base was placed in the same manner as that of the previous job. The material for the asphalt stabilized rock base consisted of a crusher-run gradation of rock put through a hot-mix plant and combined with about 4½ per cent of 70 to 85-penetration asphalt as a binder. This material was placed by the Apsco spreader in courses not exceeding 3 inches of compacted thickness for a total thickness of 10 inches. Only one course of binder was applied over this type of base to make a total thickness of 11¾ inches of base and binder.

On the third section of the job, where the entire base was built up of binder, the material was also applied with the Apsco spreader. The binder was laid down in five courses of approximately 2 inches each to produce a total of 10 inches of base. Regardless of the type of base, the final one or two courses of bituminous binder were applied by the Apsco spreader and rolled by three Buffalo-Springfield trench rollers.

New hot-mix plant

The bituminous base and binder material, as well as that for the wearing course, was mixed in a new Cedarapids Model G-60 bituminous-mixing plant. The big all-electric plant took its power from a Caterpillar D397 diesel-generator set mounted on a Martin semi-trailer.

Aggregates were bucketed from the stockpiles to the plant bins by a crane with a Blaw-Knox 1¼-yard clamshell bucket. Feeders on the bins carried the materials to the cold elevator and then through the 80-inch × 28-foot dryer. A hot elevator carried the rock to a 4 × 14-foot four-deck gradation unit mounted on top of the four-compartment bins of the plant. The several sizes of aggregates were proportioned from the bins in manually-operated scales and charged into the 6,000-pound batch pugmill.

Asphalt cement was stored in a 20,000-gallon storage tank heated by hot oil from a hot-oil heating system. Storage was also provided for 10,000 gallons of No. 5 fuel oil used by the Hy-Way heater and the burner of the dryer. The asphalt cement and fuel oil were trucked to the plant from a refinery at Wood River, Ill.

Before the resurfacing courses of bituminous binder and wearing course were placed over the old concrete, the surface was given a tack coat of RC-0 cutback asphalt applied at the rate of 0.05 gallons per square yard. On the Kiewit job, this material was applied with an Etnyre 1,350-gallon distributor. To permit traffic to continue using the road, the tack coat was immediately sanded by trucks using a Burch tailgate spreader

The bituminous mixes were placed by a Barber-Greene finisher and rolled by two Buffalo-Springfield 10-ton tandem rollers. Where it was necessary to sweep the surface between courses a Hough power broom was used.

Cover lip curbs

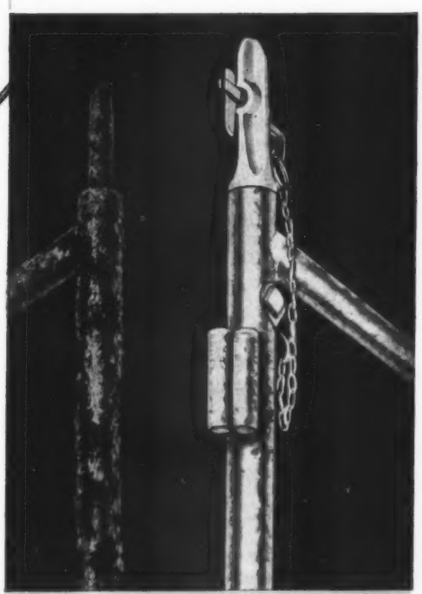
On straight sections where there were no lip curbs, a single 1¾-inch binder course was applied over the concrete slab. The 1¼-inch wearing course was then applied over this and the widening strip. Where there were lip curbs, enough additional binder was added on the roadway section to build up to the top of the lip curbs so that the wearing course would be continuous across the concrete slab and the widened strips. Wedges of binder material were laid down on some of the curves to improve the superelevation.

A typical resurfacing operation was that of Reno Construction Co., Overland Park, Kans., on a 12-mile section of U. S. 61 between Palmyra and

(Concluded on next page)

Trenching on the section of the job contracted to Peter Kiewit Sons' Co., Omaha, Nebr., was done by two Caterpillar No. 12 motor graders, one of which was fitted with this special blade attachment. The attachment replaces part of the normal cutting edge of a standard blade. *C&E Staff Photo*

your scaffolding needs "Skin Protection" too!



You've probably never thought about it in just that way, but it's true. With a protective "skin" placed over every single part of your scaffolding—one that would withstand the rigors of constant handling and exposure—these components would last years longer.

This added "skin protection" is now available in Universal Galvanized Scaffolding. Through a special chemical process known as *dichromate galvanizing*—a Universal exclusive—a lasting, lubricative coating is now applied to every single part of Ezebilt scaffolding which permits faster erection, eliminates rust, adds years to the work life of the scaffolding and looks better on the job. Best of all, these premium features come to you at *no extra cost.*

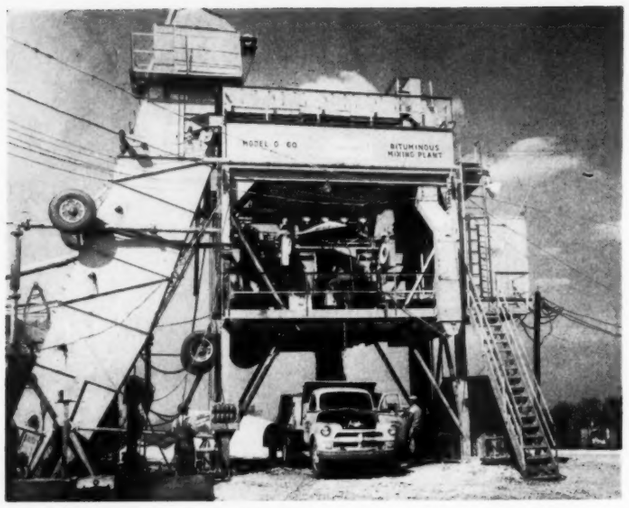
With the 'no-loose-parts' feature of Gravity-Lock construction and the extra *plus* of dichromate galvanizing, Universal offers the finest scaffolding available today. When next you order scaffolding, specify the only *galvanized* scaffolding—specify Universal Ezebilt.

Universal has a scaffold panel for every maintenance and mason need. For further complete information on dichromate galvanized Ezebilt, write today for our new 1956 catalog.

A PANEL STYLE FOR EVERY CONSTRUCTION AND MASON NEED
Rental or sales service from distributors stocks in all principal cities. See local classified phone directories.

the only
UNIVERSAL GALVANIZED SCAFFOLD

UNIVERSAL MANUFACTURING CORP. • ZELIENOPLE 1, PA.
For more facts, use Reader-Reply Card opposite page 18 and circle No. 326



Kiewit has located a new Cedarapids Model G-60 bituminous-mixing plant with a 6,000-pound pugmill, 80-inch x 28-foot dryer with dust collector, and a 4 x 14-foot four-deck screen, on a hill near the job. A hot-oil unit heats the asphalt-storage tanks.
C&E Staff Photo

Taylor, Mo. The contractor mixed the material in a 200-ton-per-hour Cedarapids batch plant and hauled to the road in dump trucks. On the road was a completely new spread of equipment consisting of an asphalt spreader, a Huber-Warco 10-ton tandem roller, and a Buffalo-Springfield 15-ton three-wheel tandem roller.

On this job, as on the others, the 20-foot concrete slab was widened with compacted rock base and binder to make a finished width of 24 feet for the wearing course. As the spreader laid the various courses of binder and wearing course, the 10-ton roller made the first pass to provide the initial compaction. The 15-ton roller followed to iron out any irregularities in the surface as well as to apply the final compaction.

In all of these cases the results appeared to be satisfactory. There was no evidence of the old concrete pavement, and the new roadway was a smooth, wide surface providing good driving and riding qualities.

Personnel

General superintendent for the Reno Construction Co. job was F. R. Dice. Road superintendent on the bituminous work was Jack McGuire. Superintendent for Payne & Dolan was Ed Reith. On the Kiewit job, Paul Hudson was superintendent and Kenneth Yount supervised the plant operations.

Resident engineers for the Missouri State Highway Department on the respective jobs were W. C. Mathis, H. R. Kehrman, and James Glenn. Engineer of construction for the Missouri department is J. J. Corbett. Chief engineer is Rex M. Whitton.

THE END

Iron and Steel Institute moves to new quarters

The American Iron and Steel Institute has transferred its operations to new quarters at 150 E. 42nd St., New York, N. Y. The organization will occupy the entire 38th floor of the building.

Text stresses continuity in analysis of structures

A new textbook for graduate engineering students, "The Analysis of Structures", by Nicholas John Hoff, presents structural analysis as a unified and logical theory. Contending that the various methods used by structural engineers are interconnected by a common factor, the author has presented each method as an almost obvious consequence of basic principles.

The principle of virtual displacements, the development of the minimal principle of structural theory, and buckling phenomena are discussed in detail. Charts, diagrams, and formulas augment the 484-page text. Problems relating to the text are included in the appendix of the book, and a cross-index, by author and by subject-matter, is also given.

Priced at $9.50, the book is available from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York, N. Y.

Leschen appoints two new sales representatives

Charles L. Swinden and Willard J. Hannon have been appointed sales representatives of the Leschen Wire Rope Division of H. K. Porter Co., Inc., St. Louis, Mo.

Swinden will cover the state of California north of Tulare through most of Nevada. Hannon was assigned to cover western Illinois, and most of Missouri.

One Man Runs This Vibrator...Anywhere

NEW 115 VOLT AC-DC VIBRATOR

In addition to the high-cycle vibrator, Homelite also has a new 115 volt AC-DC vibrator for working concrete in small forms, reinforced concrete columns, and in other "tight spots". Weighing only 32 pounds complete, it can be carried and used anywhere by one man. It will operate from either standard, 115 volt "house" current or from a low-cost Homelite carryable generator.

One man can run this Homelite High-Cycle Electric Concrete Vibrator anywhere . . . to place concrete faster, easier and more profitably than ever before. That's because he handles only the lightweight vibrator head and cable. The generator stays on the ground . . . or in any convenient spot within a 400′ radius . . . out from under foot and away from pouring operations. No special cradles or scaffolds are needed.

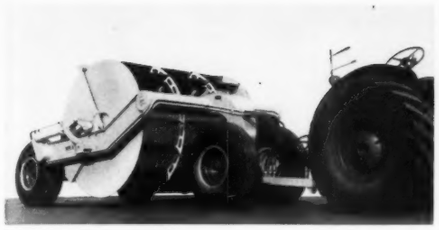
You can handle 30 to 40 cubic yards of 2″ slump concrete per hour with this powerful Homelite vibrator. Tough, kink-proof, handling hose goes anywhere . . . around corners, over obstacles . . . can't be injured by bending. Quick-connecting extension hoses let you work effectively in the deepest forms. The rugged, high-cycle motor built into the vibrator head will give long, profitable service at lowest maintenance cost. Carryable, 125 pound, Homelite generator supplies both high-cycle current for one or two vibrators *and* 110 V. DC current for your electric tools and floodlights.

Write or call your nearby HOMELITE representative today for a free demonstration.

Manufacturers of
Carryable Pumps • Generators
Blowers • Chain Saws

HOMELITE
a division of Textron Inc.
5908 RIVERDALE AVENUE, PORT CHESTER, NEW YORK

For more facts, use Reader-Reply Card opposite page 18 and circle No. 327



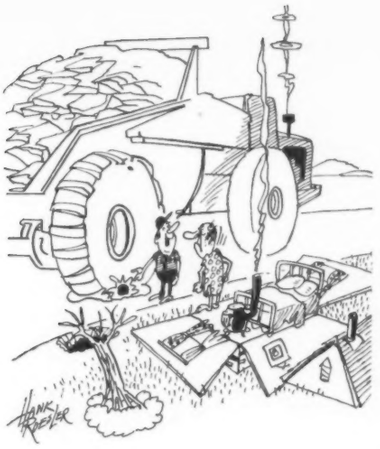
The Be-Ge Rotohaul loads from the rear and is said to require no push-loading aid from crawler tractors.

Rotary scraper needs no push from tractor

■ A new Rotohaul scraper, designed for use with 40 to 60-hp wheel tractors, has joined the line of tractor-drawn scrapers and earthmoving equipment made by the Be-Ge Mfg. Co. The Rotohaul, which has 6½-cubic-yard struck capacity, is reported to eliminate the need for aid from crawler tractors in loading.

The double cutting action of the loading vanes and cutting blade keeps earth from piling up ahead of the scraper blade, permitting high-speed loading in third or fourth gear in loose and sandy material as well as hard ground, the manufacturer points out. The Rotohaul loads from the rear. Dumping is from the front, in plain view, and the depth of spread is uniform from 1 to 16 inches.

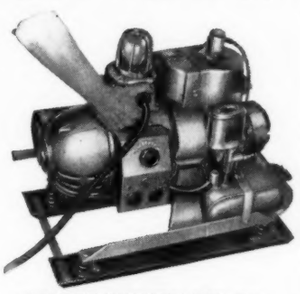
For further information write the Be-Ge Mfg. Co., P. O. Box B-1, Gilroy, Calif., or use the Request Card at page 18. Circle No. 8.



"It was nothing . . . just a blow-out."

CHOOSE
from a full line of
HOMELITE
Carryable
Construction
Equipment

SELF-PRIMING CENTRIFUGAL AND DIAPHRAGM PUMPS
Sizes: 1½" to 3" — capacities to 15,000 g.p.h. for dewatering and water supply.



ELECTRIC GENERATOR SETS FOR TOOLS AND LIGHTS
Complete range of sizes and voltages up to 5,000 watts.

LIGHTWEIGHT POWERFUL ONE-MAN CHAIN SAWS
Complete line of saws with clearing and brushcutter attachments for every woodcutting job.

HOMELITE
A DIVISION OF TEXTRON AMERICAN, INC.
PORT CHESTER, N. Y.

For more facts, circle No. 328

Screeding unit

■ The Universal Wobbler, a unit that separates fines from oversize as it feeds, is featured in a bulletin from the company. Its rugged construction and the alternate vertical positioning of the oval manganese steel bars enable the Wobbler to take on 50-ton shock loads, according to the bulletin. Pictures and diagrams show the actual working of the unit. The specifications chart places the capacity of the Wobbler at 2,500 tons per hour.

To obtain the bulletin write to the Universal Engineering Corp., Division of Pettibone Mulliken Corp., 625 C Ave. N. W., Cedar Rapids, Iowa, or use the Request Card at page 18. Circle No. 135.

Reinforcing bars

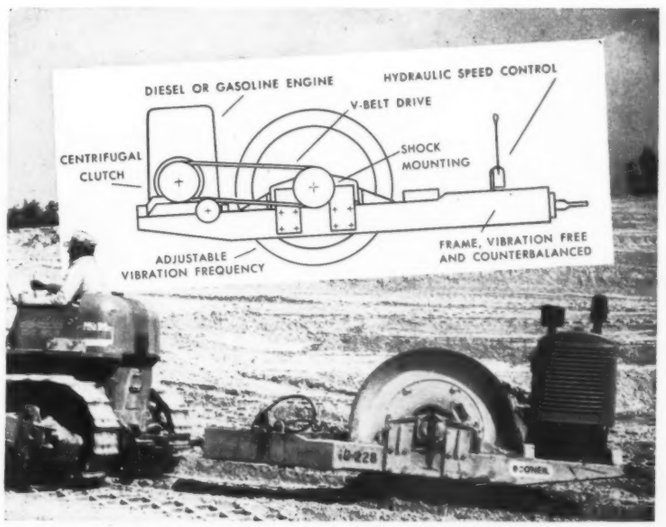
■ Wal-Lok reinforcing bars for concrete and mortar are described in a bulletin from Adrian Peerless, Inc. The bulletin states that the deformed, knurled bars conform to the standards of the ASTM and to National Bureau of Standards recommendations. Data is given on the pull, side pressure, and shrinkage crack tests of the bars. Job photos and pertinent specifications are included.

To obtain Bulletin No. 200 write to Adrian Peerless, Inc., 1442 E. Michigan St., Adrian, Mich., or use the Request Card at page 18. Circle No. 163.

Remington Arms Co. acquires Mall Tool

The Remington Arms Co., Inc., Bridgeport, Conn., manufacturer of sporting firearms, has purchased the Mall Tool Co., Chicago, Ill., in order to expand its recently-developed line of industrial products. The agreement also includes Mall's Canadian subsidiary, Mall Tool Ltd., of Toronto.

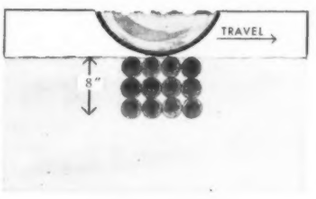
Mall manufactures portable electric tools, pneumatic tools, gasoline-engine chain saws, flexible shaft equipment, and other gasoline-powered tools.



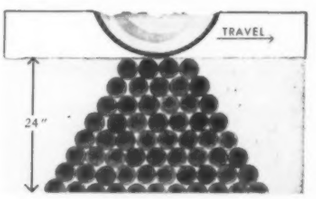
NEW CONCEPT IN COMPACTION!

VIBRO-PLUS TERRAPAC
VIBRATORY ROLLER

"Terrapac" compacts faster, better and deeper in fewer passes than ordinary 30-50 ton rollers yet weighs only 3½ tons. Saves hours of valuable time because maximum density can usually be achieved in only 2 passes . . . Light enough to be easily handled on any fill or for quick transport . . . Also useful as a static roller if desired.



CONVENTIONAL
STATIC COMPACTION
Rollers relying on weight alone produce friction forces between individual soil particles that prevent densification at any great depth.



TERRAPAC
DYNAMIC COMPACTION
Vibratory forces, transmitted to soil in all directions, reduces friction — facilitates relocation of particles at far greater depths.

An actual field test under State Highway supervision showed that a specified 100% standard proctor density could be obtained at a 24" depth after 2 passes with a "Terrapac" . . . A 15 ton smooth roller required 20 passes to obtain specified density at only an 8" depth!

VIBRO-PLUS
PRODUCTS, INCORPORATED
STANHOPE, NEW JERSEY No. 41-6

For more facts, use Reader-Reply Card opposite page 18 and circle No. 329

Attachment converts tractor to trencher

■ A trencher attachment manufactured by the Auburn Machine Works, Inc., is recommended for converting the International 300 utility tractor to a trenching machine. A geared spacer—with all gears running in oil—is inserted behind the tractor transmission. The spacer lengthens the wheelbase 6 inches, puts more weight on the front wheels, and permits smoother digging of straighter trenches, according to the company.

A hydraulic drive provides power for propulsion while the unit digs at any speed up to 10 fpm, depending on soil conditions. The Auburn hydraulic boom lift operates the digging boom in a 190-degree arc by means of one control lever. From one position, the operator has control of clutch, tractor speed, and trench depth. The new machine is capable of digging trenches 6 to 14 inches wide and up to 6 feet deep.

The Auburn trencher, mounted on an International 300 tractor, digs trenches 6 to 14 inches wide and 6 feet deep at speeds up to 10 fpm.

The digging ladder is of chain with alternate right and left-hand cutting bits. It cuts and lifts the dirt to the surface, where augers convey it away from the trench edges. The Auburn trencher boom lifts hydraulically to transport position in seconds, making job-to-job moves simple.

For further information write to Auburn Machine Works, Inc., Auburn, Nebr., or use the Request Card at page 18. Circle No. 24.

Flexible metal tube for wiring systems

■ Flexible tubing said to have unusual installation advantages is now available from The Flexaust Co. under rights acquired from Switzerland.

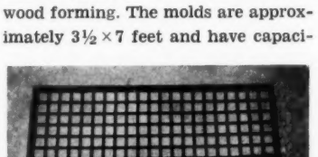
In Switzerland and other countries Pilica tubing has seen wide use as electrical conduit. It is recommended for burying in concrete ceilings and floors. As it can be cut with a hacksaw or knife, bent by hand for permanent bend, and made to fit all standard connectors, installation time is saved.

Pilica tubing has a 3-ply wall and can be made in almost any desired combination of ferrous and nonferrous metals, fiber, paper, and other materials. It has high wall strength, watertightness, and sharp bending radii. The tubing is made in inside diameters ranging from ⅜ to 2 inches.

For further information write to The Flexaust Co., 100 Park Ave., New York 17, N. Y., or use the Request Card at page 18. Circle No. 115.

Concrete bolster blocks made with steel molds

■ The production of concrete bolster blocks to support reinforcing steel in flat and tube slabs and bridges is said to be faster and more economical with Martin steel concrete molds than with wood forming. The molds are approximately 3½ × 7 feet and have capacities of 210, 168, or 144 blocks, depending on the size.



This model of the Martin steel concrete mold forms 210 bolster blocks at one pour.

The use of the steel mold does away with the fabrication of wooden forms and their stripping. These units are more resistant to the weather and are easily stockpiled, the manufacturer points out. Also, they may be removed after the pour much sooner than wooden forms.

Martin steel concrete molds are welded with 1/16-inch gage steel. The frames are made of ⅛-inch stock. Standard units will handle 2 to 10-inch slabs; larger sizes can be made to order.

For further information write to Martin Steel Concrete Mold Fabricators, 109 Rockwood Ave., Cranston 9, R. I., or use the Request Card at page 18. Circle No. 107.

8 Reasons Why
UNI-FORM
Panels are the most widely used Prefabricated Form in the Industry

VERSATILITY
Uni-Form Panels will form straight, irregular, curved, battered walls . . . slabs, beams, columns, piers—everything from small house foundations to massive concrete structures.

COMPLETE — READY TO USE
The Uni-Form Panel System is complete, ready to use when it reaches the job. Eliminates field fabrication. Result: FASTER JOB STARTS.

FAST ERECTION
Simple assembly of easy to handle panels increases productivity of labor. Form more contact area per man hour with Uni-Form Panels.

AUTOMATIC ACCURACY
Assembly of Panels with Uni-Form Ties furnished for any wall thickness insures automatically accurate forming. Tie positively locks and spreads panels. No measuring . . . no guesswork.

LUMBER SAVINGS
You use less lumber in Uni-Forming. Steel-framed panels erect into a tight, rigid form requiring minimum alignment and bracing on 1 side only—regardless of height. Saves labor too.

FASTER STRIPPING
Less alignment and bracing lumber . . . fewer parts to remove means faster stripping, lower costs.

LONG LIFE
Rugged steel frame designed for fast pouring, cradles and protects plywood edges . . . permits maximum re-usage of plywood (actually 50 times or more) before replacement is necessary. Minimum panel maintenance required . . . lower material costs.

EXPERT ENGINEERING SERVICE
Universal's engineering staff and field engineers provide competent, specialized assistance, backed by over 40 years of experience in concrete forming.

Branch Offices and Warehouses at: Los Angeles • San Leandro, Calif. • Houston, Texas • Cleveland, Ohio • Baltimore, Md. • Atlanta, Ga.

3 SIMPLE STEPS FOR ASSEMBLY

1. Insert Tie loop in Panel tie hole.
2. Tie Key locks Uni-Form Tie to Panel.
3. Tie loop receives adjacent Panel. Insertion of Tie Key completes tieing, locking and spreading operation.

3 BASIC ELEMENTS

UNI-FORM PANEL . . . Heavy duty — steel-framed, plywood faced.

UNI-FORM TIE . . . High strength, easy break-back.

UNI-FORM TIE KEY . . . Wedge shaped for fast, easy insertion and removal. Reusable.

UNIVERSAL FORM CLAMP CO.
1238 N. Kostner Avenue • Chicago, Illinois

☐ Send me complete details on UNI-FORM Panel System.
☐ SHOW ME! I am sending plans under separate cover.

Name_____
Firm_____
Address_____
City_____ Zone____ State_____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 330

The Clipper CP-300 joint sealer needs only a supply of compressed air to go into operation.

Announce air-powered joint-sealer unit

■ A new joint sealer for applying cold joint-sealing compounds to newly sawed control joints in highways and airport installations is announced by the Clipper Mfg. Co. The Clipper CP-300 is a complete, ready-to-use unit requiring only connection to a suitable air compressor.

Features on the Clipper CP-300 include air controls, an accumulator, and a spreader shoe. The air controls consist of air regulators, air gage, air filters, and air lubricators. The accumulator is placed in the discharge line of the pump to smooth out the pulsation of the material caused by the reciprocating action of the air pump. The spreader shoe is attached to a nozzle and rides on top of the pavement, scraping off any excess material and leaving only a slight film.

In addition to the sealing of control joints, the Clipper CP-300 is recommended for calking, waterproofing, applying protective coatings on roofs and vertical walls, heavy-duty lubrication, and for spraying paint.

For further information write to the Clipper Mfg. Co., Suite 635, 2800 Warwick, Kansas City 8, Mo., or use the Request Card at page 18. Circle No. 22.

New Caterpillar plant and parts depot planned

A 100-acre site in Morton, Ill., has been chosen as the location for the new parts department plant of the Caterpillar Tractor Co. of Peoria. With construction of the facility starting this summer, the plant is expected to be in full operation by early 1958.

Office, inventory, receiving, stores, order-filling, and shipping operations will be transferred. About 1,000 people will be employed at Morton.

Space at the Peoria plant, formerly devoted to parts, will be returned to use in the manufacture of crawler tractors and diesel engines.

Caterpillar is also planning to locate a new parts depot near Hialeah, northwest of Miami, Fla., that will provide emergency parts service for south Florida and export dealers.

V-8 truck engines

■ The International Harvester line of heavy-duty V-8 truck engines is discussed in a manual. The three engines that comprise the line are partners to the Red Diamond 6-cylinder gasoline, lpg, and diesel engines. Maximum horsepower for the V-8 line ranges from 206 to 257. Included in the manual are cutaway views and brief descriptions of the engine parts, outstanding features of the engines, and pertinent specifications.

To obtain Form CR-637-F write to the International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 43.

Porter names Garber

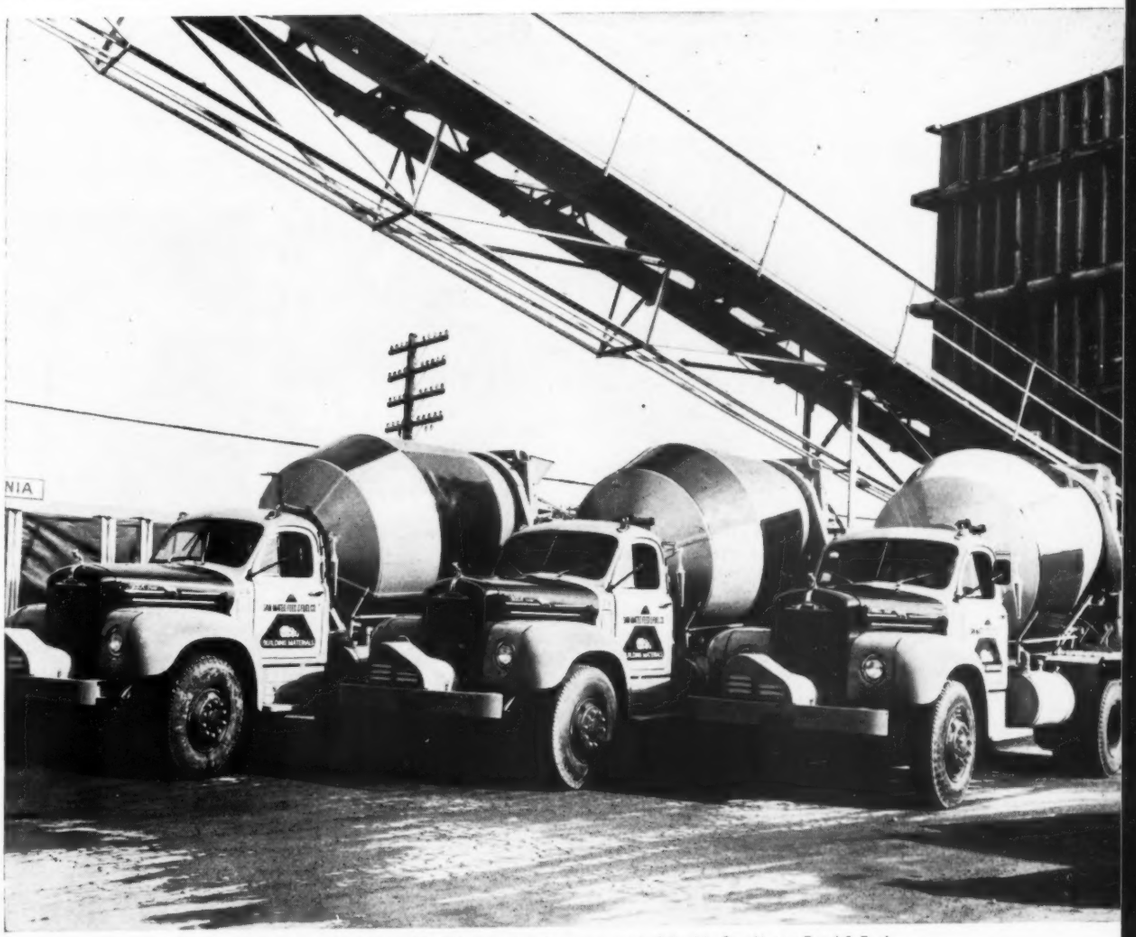
Lawrence L. Garber has been appointed to the newly created position of vice president in charge of production by the H. K. Porter Co., Inc., New York, N. Y. He will supervise production in the firm's thirteen divisions.

Associated with Porter since 1950, Garber will make his headquarters in Pittsburgh, Pa.

Contractor's light

■ A combination contractor's light assembly and portable power unit with a 120-volt single-phase ac generator is described in a folder from the manufacturer, Allmand Bros. Mfg. Co. A picture of the unit shows the 3,500-watt light assembly, steel telescoping tower, base and guard rails, 12-gallon fuel tank, and Wisconsin TF engine.

To obtain the folder write to Allmand Bros. Mfg. Co., Holdrege, Nebr., or use the Request Card at page 18. Circle No. 136.



These three Mack model B421S concrete mixers are part of the big San Mateo Feed & Fuel Company's fleet. Macks have helped set the pace for their growing operation since 1951.

compared to all other makes in our fleet . . . MACK's performance and maintenance records were outstanding . . . that's why we bought 35 more

—R. C. Hughes, President
San Mateo Feed & Fuel Company
San Mateo, California

Proof of performance is what Mr. R. C. Hughes, president of San Mateo Feed & Fuel Company, demanded before buying 35 new Macks—21 model B421S mixers, and 14 model B30P dumpers.

"We relied on our records," commented Mr. Hughes, "when the time came to make a major decision for modernizing our fleet. The answer was clear . . . in our mixed fleet Macks were the standouts for fuel economy, low maintenance cost, and over-all earning capacity.

"We bought our first six Macks in 1951, and added 14 more in 1952. Now, with the addition of 35 new units, our fleet contains 55 Macks. We consider our big investment in Macks an important factor in building increased profit into our rapidly growing business."

Get the facts on Macks before you buy another truck. See your Mack Branch or Distributor and find out how Mack can give you top performance and economy in every trucking operation.

4014

MACK TRUCKS, INC., Plainfield, New Jersey. IN CANADA: Mack Trucks of Canada, Ltd.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 331

A. L. Lott, left, discusses some business with William S. Conley, the younger member of the Conley family sharing management responsibilities for the 4-year-old firm.

Branch store grows up

Equipment distributors dubious about opening branch stores would be more optimistic if they viewed what Conley-Lott Machinery Co., Lubbock, Texas has done in only four years.

A branch of Conley-Lott-Nichols Machinery Co., Dallas, in 1952, Conley-Lott Machinery Co. is today a completely independent firm with a branch store of its own in Odessa. Conley-Lott-Nichols, Dallas, is now owned and operated by Wallace Nichols. The only link between the two firms is that W. W. Conley and his son, Bill, along with A. L. Lott and his son Bill, the owner-managerial staff at the Lubbock headquarters, originated the parent outfit.

Geared to market

Starting a dealership in what used to be a branch store, Conley and Lott decided that a policy of contractor service and aggressive sales effort could make the new firm a going concern. In the four years of its existence, the firm has seen this policy pay off. The company is growing steadily: since its founding, the parts inventory has quadrupled. Most of the increase in parts stock represents the firm's effort to have enough parts available to serve contractors better; some of the increase is due to the new lines being handled by Conley-Lott.

Big area covered

With a 60,000-square-mile territory reaching over the north Texas Panhandle country, and extending south through the Permian Basin country of Odessa and Midland, Conley-Lott serves a construction market centered in one of the nation's biggest oil-producing centers.

The oil industry provides little direct business for the dealer, however. One of its markets, indirectly connected with oil and gas development in the region, is pipeline contracting. Big pipeline firms like R. H. Fulton Co., Inc., Lubbock, with about 175 large tractors, 50 pullshovels, and auxiliary pipeline equipment, represents a good deal of new-equipment business, parts sales, and equipment rental and contract repair work for Conley-Lott. Smaller contractors in this field are even better prospects for equipment rentals and shop repairs.

But most of C-L's biggest customers are highway contractors. Roads in

REQUIRES NO CHIPPING – NO ROUGHENING – NO PRIMING – NO CURING –

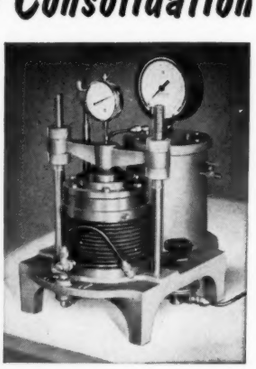
- The only concrete-color material that can be applied thin as 1/16" or more than 1" thick, as needed.
- Rough, pitted, trowel-marked, uneven or broken concrete and masonry can be made smooth with a thin coat of LATEX CONCRETE TOPPING — INDOORS OR OUT — the answer to those "frozen" or "rain-pitted" concrete surfaces!
- 52-lb. drum includes 40 lbs. of powder mix, 1 gallon Latex liquid. Covers 100 sq. feet, 1/16" thick.
- If your dealer cannot supply you, one unit delivered to you for $10.50, 2 units $17.00.

The CAMP COMPANY, Inc.
6958 South State Street, Dept. CE-86
Chicago 21, Illinois

OVER 21 YEARS OF CONTINUOUS SERVICE

For more facts, circle No. 332

For Efficient Consolidation Soil Testing You Need.. an OLSEN Conbel



- Infinite choice of loads up to 10 tons per square foot on 2½" dia. sample
- Floating bellows—eliminates eccentric loading
- Instantaneous load application
- Compact—less than 1½ sq. ft. of table space
- Simplified controls—one man operation
- Light weight—portable

For information about the Conbel and other soil testing equipment in the Olsen line, write for Bulletin 50.

TINIUS OLSEN TESTING MACHINE CO.
2100 Easton Road Willow Grove, Pa.

For more facts, circle No. 333

These pumps turn "tough" jobs into "PROFIT" jobs!

- Dual Volutes
- Self Cleaning Case
- Lighter Weight
- Long Life Seal
- Half the Parts
- Unitized Construction

Contractors "in the know" insist on CMC Dual Primers! They've learned from on-the-job experience that they can rely on the exclusive features of these pumpers to give FASTER DUAL PRIMING — MORE DEPENDABLE OPERATION — LONGER LIFE WITH LESS MAINTENANCE. Get full details today.

CONSTRUCTION MACHINERY COMPANY, Waterloo, Iowa

Capacities to 240,000 G.P.H.

Also a complete line of 3" and 4" Diaphragm Pumps, gasoline engine and electric motor models. 1 and 2-stage Hi-Pressure Pumps. WRITE FOR FREE LITERATURE.

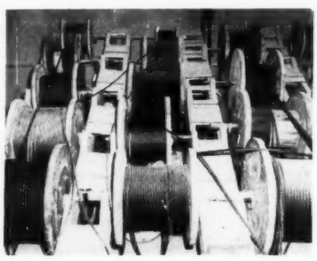
For more facts, use Reader-Reply Card opposite page 18 and circle No. 334

Former branch of Conley-Lott-Nichols Co., in Lubbock, Texas, is now the headquarters for the growing Conley-Lott dealership

Adams, Gardner-Denver, Caterpillar, and Euclid are represented in the lineup at one side of Conley-Lott's storage yard. New, used, or rental equipment is available here.

this area are mainly penetration asphalt or plant-mix pavements, light grading, and heavy crushing and screening for caliche subbases characterize road work here, and contractors need and buy, tractors, crushing plants, asphalt distributors, hot plants, rollers, compressors, and drilling equipment.

The lines carried by Conley-Lott reflect the type of construction market it serves. The principal equipment lines include Gardner-Denver, Euclid, Chain Belt, Cedarapids, and Blaw-Knox equipment, and these are



Various types and diameters of cable are held in spools on these wooden timber racks so that orders can be filled almost as quickly as they are received.

supplemented by 24 other lines, ranging from Gar-Bro concrete-handling equipment to Schield Bantam cranes. From these lines, a highway contractor or pipeline contractor can select just about anything he needs.

Sales and service territories

In line with maintaining a high standard of contractor service, Conley-Lott has split its 300-mile-long and 200-mile-wide area into three sales and service territories. Even so, salesmen based in Lubbock and Odessa sometimes have long drives to construction jobs, and some salesmen have to travel 200 miles from the headquarters office before they even arrive in their own territory.

According to W. S. Conley, salesmen are trained to think in broad terms when gaging a contractor's needs either on a construction site or in the plans room of AGC headquarters in Lubbock. Many salesmen have visited a job to check about a shovel sale and left with an order for additional types of machinery needed by the contractor.

Service is handled in two ways. Several servicemen specialize on GM diesels in Euclids, and some are experts on Murphy diesels. Most of the mechanics, however, are all-around

(*Concluded on next page*)

For more facts, circle No. 335

In Pennsylvania . . .
the Marsolino Construction Co., Uniontown, Pa., uses this ¾-yd. 22-B on turnpike extension work near Center Square. Quick-fill, easy-dump dipper and good maneuverability are two of many features that make the 22-B a profitable machine to own.

In Massachusetts . . .
S. J. Groves & Sons use this 4-yd. 88-B to load blasted rock for the Massachusetts Turnpike project near Blanford. The 88-B has a twin rope balanced crowd system that permits operator to obtain the most effective dipper speed when both hoist and crowd are needed — providing great digging force. All Bucyrus-Erie components are arranged for easy maintenance.

In Colorado . . .
this 38-B loads granular base material for state highway department on job near Monte Vista. The Pioneer Construction Company of Pueblo is the owner of this machine.

In Washington . . . this 1½-yd. 38-B cuts access road through wilderness of Olympic National Park for Bureau of Public Roads. Machine is owned by Hugh Govan, Port Angeles. Heaped dippers and fast cycles make Bucyrus-Eries ideal for road construction work.

TOP PERFORMERS...

On roadbuilding jobs all over the country

Wherever Bucyrus-Eries work they are standouts for high output and dependable, long-life service. Such performance on the job results from close attention to quality in the factory, where research and design, testing and manufacturing aim for perfection in every detail.

All the castings that go into these machines are poured in Bucyrus-Erie's own foundries under careful laboratory supervision which holds them to the highest standards. Modern forging and heat treating methods assure the strength, toughness, and hardness demanded for heavy field duty. Through individual design, working parts are combined into machines with the right balance of weight and power to handle their rated capacity most efficiently.

For more information on what the high-quality manufacturing of Bucyrus-Eries can mean to you, call, write, or see your nearby Bucyrus-Erie distributor soon. Capacities range from ⅜- to 4-cu. yds. 200E56C

BUCYRUS ERIE SOUTH MILWAUKEE, WISCONSIN

In Georgia . . .
this ½-yd. 15-B digs fill near Flintstone for state highway department. Fewer parts, anti-friction bearings, superior materials, and careful coordination of working parts puts every pound of weight to work . . . makes the 15-B most efficient in its size range. The machine pictured is owned by W. J. Coulter, St. Elmo, Tennessee.

In Kentucky . . .
this 3-yd. 71-B loads trucks at one stretch of the Kentucky Turnpike. Its owner is Traylor Brothers Contracting Co., Evansville, Ind. Power and coordination to handle heavy rocks smoothly and efficiently make the 71-B truly a "big league" performer.

distributor doings

men who know all the lines handled by C-L.

Servicing of contractor's equipment is not a one-way affair as far as Conley-Lott is concerned. The high quality of this contractor service makes for contractor good will and establishes a valuable sales contact with the construction firm for Conley-Lott. Often, when repairs are being made, new equipment needs are discovered and the business goes to C-L.

Realizing that small contractors frequently need equipment for a short period of time, a need that would not justify a purchase, Conley-Lott has built up a paying business on machinery rental. Equipment like air compressors and tamping machinery for use around culvert pipe are in this rental category. At present, the firm has from 12 to 15 used pull shovels, and these too are for rental or lease, as well as for sale.

Save time for contractors

When a contractor's representative calls at the Lubbock headquarters, everything is done to save his time and speed him on his way. The stockroom is neat and orderly, and a complete card index at the parts-room desk shows how many parts of a particular type are available. A manufacturer's literature board, well-indexed and arranged, is located in the front office, and any of this material is available to a customer for himself or his mechanics.

In the spacious headquarters yard on South H Street in Lubbock, a customer can inspect stored new equipment, used or rental equipment. A heavy-equipment repair shop, equipped with overhead cranes and heavy-duty tools, drill presses, and grinding machinery, is located here so that service work can be done as rapidly as possible.

Even the dispensing of cable has been streamlined. Heavy timber racks hold spools of cable in various types and diameters. A pipe, run through the core of a spool, suspends a spool of cable between two of the racks. When an order comes in for a certain type and diameter cable, a machine, operated by one man, unspools, measures, and then cuts off the required length of cable. Even an order for large-diameter cable can be filled by one man with this setup.

The Odessa branch, similar to the headquarters setup at Lubbock, serves as an advance base for parts and service which would otherwise have to be supplied from Lubbock. This branch, under manager Joe Ligon, is headquarters for a few servicemen and a salesman.

Conley-Lott's management feels that the firm's growth, roughly in proportion to the growth of population and construction activity in this region, has been healthy so far. By keeping its service and sales force filling contractors' needs, and by maintaining an inventory of parts that keeps contractors coming back to Lubbock and Odessa rather than going to equipment dealers in the larger cities, Conley-Lott hopes to keep its business growing even bigger.

THE END

General Road Machines has six new dealers

Six new dealers have been named to handle the line of road-building machines, forms, and hand tools, and complete stocks of accessories and service parts made by General Road Machines, Inc., Niles, Ohio.

Herman M. Brown Co., First and Sheridan Streets, Des Moines, Iowa, and its branch offices in Cedar Rapids, Sioux City, and Council Bluffs, will cover Iowa; while Minnesota and North Dakota will be served by W. H. Ziegler Co., Inc., 2929 University Ave. S. E., Minneapolis. Central Indiana has been assigned to Flesch-Miller Tractor Co., 4611 Franklin Road, Indianapolis. Sales in northeastern Ohio will be handled by George P. Williams Co., 3135 W. 117th St., Cleveland.

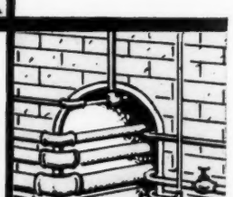
Two distributors in the east are Furnival Machinery Co., Lancaster

QUICK, LOW-COST ANSWER TO 4 PROBLEMS...

Flat-Base Pipe

PEDESTRIAN UNDERPASS

The practical way to safeguard the lives of adults and children. Especially valuable near schools and playgrounds. Also helps to maintain an even flow of street-level traffic.

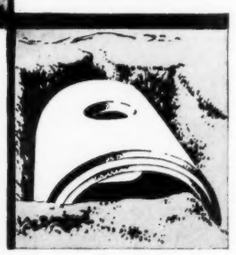


UTILITY GALLERY

Carries steam pipes, gas mains, electrical cables and telephone lines with ample room for workmen to make repairs. Flat-Base Pipe is also used for culverts and cattle passes.

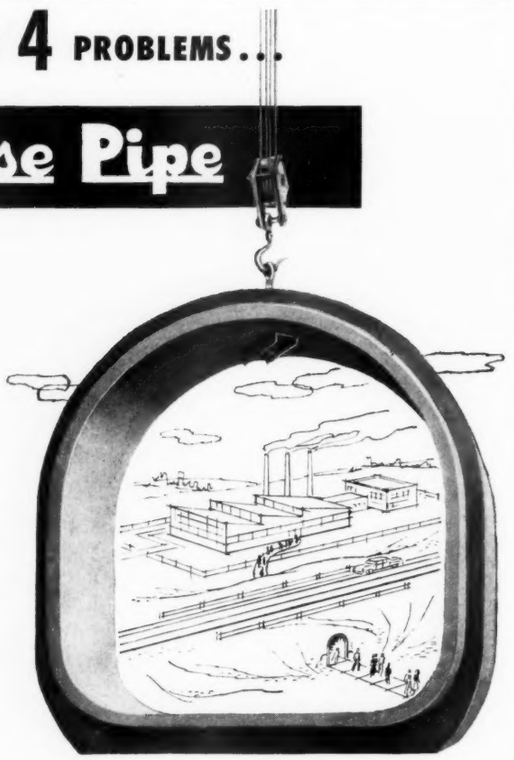
CATTLE PASS

Eliminate the hazards of road level crossings to lives and livestock with Flat-Base underpasses. Reinforced concrete Flat-Base Pipe can be jacked under railroads and highways without disturbing traffic.



UTILITY MANHOLE

Manholes for utility companies have often been built with Flat-Base Pipe in less than four hours. This eliminates needless traffic delay and reduces labor costs to a minimum.



Save as much as *30%* in the construction of pedestrian underpasses, culverts, utility galleries and manholes—with pre-cast Flat-Base Pipe. You can place and cover from 52 to 100 feet of Flat-Base Pipe in a single day. No forms to construct . . . no steel reinforcing to position . . . no concrete pouring. Can be jacked through old construction or laid in new fills. Joints are tongue and grooved and can be made watertight with rubber gaskets. Available now, in a wide variety of standard sizes.

Our technical staff will be pleased to assist you with your pipe problems.

Write for free, illustrated folder on money-saving Flat-Base Pipe.

AM

AMERICAN-MARIETTA COMPANY

CONCRETE PRODUCTS DIVISION

GENERAL OFFICES: AMERICAN-MARIETTA BUILDING, 101 EAST ONTARIO STREET, CHICAGO 11, ILLINOIS • PHONE WHITEHALL 4-5600

DIVISIONS AND SUBSIDIARIES

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Concrete Conduit Company — Lamar Pipe and Tile Company — Universal Concrete Pipe Co.
Tellyer Concrete Pipe Co. — American-Marietta Company of Pennsylvania

For more facts, use Reader-Reply Card opposite page 18 and circle No. 336

"Superior" Electric

Carpullers

CAPSTAN TYPE, DRUM TYPE AND SPECIAL TYPES

Model SC Superior Capstan Carpuller

Model EP Drum Type Carpuller

One man can move hundreds of tons of rolling load with practically no effort. Economical, efficient, Carpullers are available for your specialized requirements.

Write for bulletins and catalogs!

Designed and Manufactured by

SUPERIOR-LIDGERWOOD-MUNDY CORPORATION

Main Office and Works: SUPERIOR, WISCONSIN, U. S. A.
New York Office, 7 Dey Street, New York 7, N. Y.

For more facts, circle No. 337

Ave. at 54th St., Philadelphia, Pa.—a firm which also has branches in Harrisburg and Pottsville, Pa.—and The Paving Supply & Equipment Co., 10th and Girard Sts. N. E., Washington, D. C. Furnival will sell General Road Machines' products in Delaware, New Jersey and Pennsylvania, and Paving Supply & Equipment will be the general distributor for Maryland, northeastern Virginia, and the District of Columbia.

Prime-Mover names two new dealers

The Prime-Mover Co., Muscatine, Iowa, has appointed two new distributors of power carts in the New York and Chicago areas.

Contractors Supply Corp., Long Island City, N. Y., will cover the southeastern counties of New York, including New York City. The firm's Englewood, N. J., office will handle northern New Jersey.

In Chicago, Ill., Arrow Contractors Equipment Co., has been authorized as a distributor for northeastern Illinois.

B-L-H distributors named

Four new distributors are handling the line of Lima shovels, cranes, draglines, and pull shovels manufactured by the Construction Equipment Division of Baldwin-Lima-Hamilton Corp., Lima, Ohio.

Ray Long Equipment, Inc., 820 Blossom St., Columbia, S. C., will cover the entire state, while all but six counties in Kentucky will be served by Emmett C. Watson Co., Inc., 310 E. Brandeis St., Louisville. The Long firm will also handle the Austin-Western crushing equipment made at the Lima, Ohio, plant.

Half of the state of Washington and all of Alaska will be handled by

(Concluded on next page)

A STATEWIDE DEMONSTRATION sponsored by the Boardman Co., Oklahoma City, introduced the new Allis-Chalmers 45 heavy-duty motor grader to Oklahoma contractors. Conducted over a four-week period, the demonstrations were given at thirty highway locations throughout the state. In part of the event, involving grading a mile of road, equipment operators were given the opportunity of handling the unit themselves. County and road officials, and personnel of Allis-Chalmers Mfg. Co., Milwaukee, Wis., attended the dealer's demonstration.

WE OWN AND OFFER
FOR IMMEDIATE SHIPMENT

ELECTRIC WELDED STEEL REINFORCING WIRE MESH

Specs: 3" Sq. Mesh—5 Ga. Wire
In Rolls about 87" wide x 77 ft. long
Weight: about 530# each

DIMENSION IDEAL FOR EASY INSTALLATION

•

GAUGE & MESH HIGHLY SUITED FOR HEAVY ROAD AND BRIDGE CONSTRUCTION, MATTING, ETC.

•

Approx. 420 Tons Available
Following Prices Substantially Below Mill

PRICE:

$160.00 Net Ton—Min. Order 100 Tons
$165.00 Net Ton—Min. Order 50 Tons
$170.00 Net Ton—Min. Order 20 Tons
$180.00 Net Ton—Min. Order 10 Tons

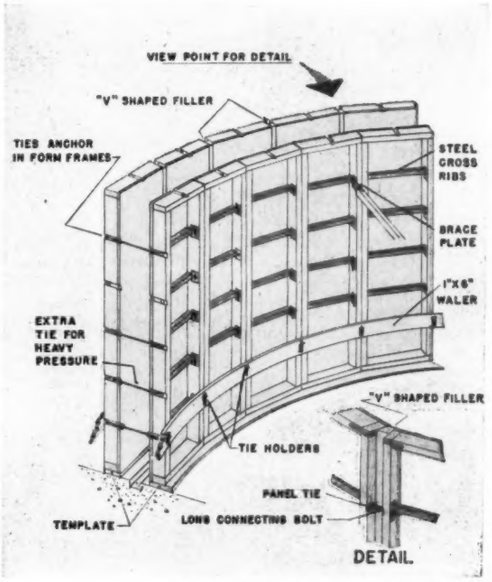
FOB CARS • SCHENECTADY, N. Y.
WIRE • WRITE • PHONE

WF STEEL PRODUCTS, INC.
80 PARK AVE. • NEW YORK 16, N. Y.
Phone: OXford 7-1590-1591

For more facts, circle No. 338

"Snake-Style" wall for Omaha Auditorium grounds. Peter Kiewet & Sons, Omaha, Gen. Con.

SYMONS FORMS on Serpentine Retaining Wall



Symons Forms were used exclusively to form this serpentine retaining wall which is 20 feet high at the highest point and slopes to 8 feet high at the lowest point. These walls were constructed to facilitate parking on the grounds of Omaha, Nebraska's city auditorium. Symons Forms were used for 30,000 square feet of forming on this job.

Our Engineering Staff furnished complete form layouts and cost sheets for the form work. This service was rendered at no charge to the contractor. Our fieldmen gave regular on-the-job service.

Symons Forms, Shores and Column Clamps can be rented with purchase option.

Symons

SYMONS CLAMP and MFG. COMPANY
4251 West Diversey Ave., Dept. H-6, Chicago 39, Illinois

Please send me the items checked:

☐ Information regarding Symons Panel Forms
☐ Information regarding Column Clamps, Shores, Bar Ties

Name_____
Firm_____
Address_____
City_____ Zone____ State____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 339

distributor doings

Evans Engine & Equipment Co., 1230 Westlake North, Seattle. Reno Equipment Sales Co., 1700 West St., Reno, Nevada has a territory that includes Mono County in California and all but two counties in Nevada.

Euclid names new dealer

The Euclid Division of General Motors Corp., Cleveland, Ohio, has appointed Brooks Machinery, Inc., Jacksonville, Fla., a dealer for the firm's complete line of earthmoving equipment. From headquarters at McCoys Boulevard and Claude Street, Brooks will sell and service Euclid equipment in counties north of and including Brevard, Orange, Lake, Sumpter, Marion, and Levy.

Rish adds another plant; total now comes to 14

The Rish Equipment Co., Bluefield, W. Va., has opened a new plant—the sixth in as many months—in Youngstown, Ohio.

Located at 250 E. Indianala Ave., the new plant will serve a dozen counties in the Youngstown area which were formerly handled by the Rish plant at Cleveland. The facility, located on a 100×434-foot site, has ample room for future expansion.

This newest addition boosts to 14 the number of Rish plants in Ohio, Virginia, and West Virginia.

Goodyear appoints new southern dealer

A Jacksonville, Fla., firm, S. B. Hubbard Co., has been named a distributor of industrial rubber products produced by the Goodyear Tire & Rubber Co., Akron, Ohio. In addition to its sales services, Hubbard operates equipment to splice and vulcanize transmission and conveyor belts.

New dealer to handle government, export work

C. J. Haring, former director of general equipment sales for Westinghouse Air Brake Co., Pittsburgh, Pa., has established his own firm to represent equipment manufacturers in sales to the federal government and

C. J. Haring, organizer of a new equipment sales office.

to the export market. He will also handle special assignments and do consultation work.

Haring plans to maintain offices in Pittsburgh, but until the facility is ready for occupancy, he will make his headquarters in Sewickley, Pa.

Diesel Energy distributor

The Diesel Energy Corp., New York, N. Y., has appointed Atlas Copco Pacific, Inc., San Carlos, Calif., a distributor of Deutz air-cooled engines. The Diesel Energy firm is the sole importer of the Deutz units, which are manufactured by Kloeckner-Humboldt-Deutz AG, Cologne, Germany.

Atlas Copco, in turn, has appointed four dealers to handle the engines—Magneto & Diesel Supply, Boise, Idaho; L. A. Jones Co., Salt Lake City, Utah; Pasco Machine Shop, Inc., Phoenix, Ariz., and Diesel Engine Service, Sacramento, Calif.

A-C dealer organizer dies in plane crash

Marshall L. Noel, president of the Frantz Tractor Co., Inc., New York, N. Y., was killed June 20, when the Venezuelan Super-constellation airliner crashed into the sea off the New Jersey coast. He was on a business trip to Caracas to visit a dealership he had organized last year to handle Allis-Chalmers equipment.

Associated with the construction-

These three PRIME-MOVERS placed over 50 cu. yds. of concrete per hour

Here is the proven practical way to cut construction costs immediately!

Contractors switch to labor-saving PRIME-MOVER without complicated job preparation or set-up.

NOW, many contractors use a PRIME-MOVER when there is concrete to place — bricks to haul — materials to move.

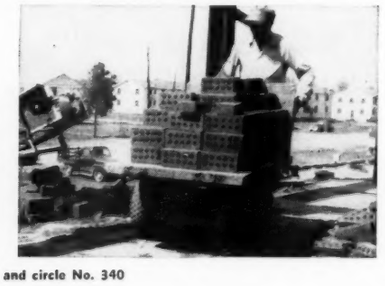
The PRIME-MOVER is narrower than hand buggies and only six inches longer. One man with a PRIME-MOVER will place 12 to 17 cu. yds. of concrete per hour, or haul up to 300 brick per trip.

PRIME-MOVER has a dump bucket and a flatbed that interchange in seconds without tools. Powered by a dependable engine. The transmission requires a minimum of maintenance. PRIME-MOVER is stocked, serviced, and sold by leading distributors throughout the United States and Canada.

Write for job information and estimators performance data — and literature on the newest PRIME-MOVER, the Model 15A.

PRIME-MOVER pouring concrete from bucket

PRIME-MOVER hauling tile on flatbed

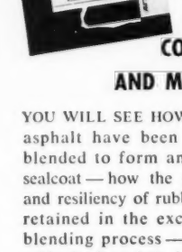


PRIME-MOVER

THE PRIME-MOVER CO., MUSCATINE, IOWA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 340

BERRY'S *RUBBERIZED* ASPHALT



THIS FOLDER CAN *SAVE YOU THOUSANDS OF DOLLARS* IN ROAD CONSTRUCTION AND MAINTENANCE

YOU WILL SEE HOW rubber and asphalt have been successfully blended to form an all weather sealcoat — how the adhesiveness and resiliency of rubber have been retained in the exclusive Berry blending process — why Berry's rubberized asphalt is less susceptible to temperature, holds more aggregate, saves on bitumen and requires far less maintenance.

Write for your copy today.

BERRY ASPHALT COMPANY OF ARKANSAS

P. O. Box 800 Magnolia, Arkansas

MEMBER OF THE ASPHALT INSTITUTE

For more facts, circle No. 341

machinery field since 1928, Noel had served with the tractor division of Allis-Chalmers Mfg. Co., Milwaukee, Wis., rising to the post of general sales manager. He later became vice president and treasurer of Tractomotive Corp., Deerfield, Ill., and remained in this position until his association with Frantz in 1952.

Atlantic Tug & Equipment is dealer for Pioneer

Atlantic Tug & Equipment Co., Inc., Syracuse, N. Y., is a new distributor for Pioneer Engineering Works, Inc., Minneapolis, Minn. The distributor, located at 1801 Erie Blvd. E., and its branches in Albany, Whitesboro and Massena, will serve the northeast portion of New York State with the complete line of aggregate-producing, road-building, and pit, mine, and quarry equipment made by Pioneer.

LeTourneau-Westinghouse names new distributor

Contractors Equipment & Truck Co., Inc., 780 E. Third St., Lexington, Ky., has been appointed a distributor of the complete line of equipment manufactured by the LeTourneau-Westinghouse Co., Inc., Peoria, Ill. The firm, which will also handle motor graders manufactured by the Adams division of LeTourneau-Westinghouse, will cover the entire state of Kentucky, with the exception of three counties.

Dealers—this is your department, so send in data regarding appointments, personnel, changes in address, new plants, etc. . . . photos, too, if you wish.

Diesel-power lift trucks

■ Diesel engines are now original equipment on certain Hyster Co. lift trucks, according to literature from the company. Waukesha Model 180 DLC 4-cylinder engines are on Hyster's 3,000 to 5,000-pound-capacity lift trucks. Mounted on the 6,000 and 8,000-pound units is the Perkins P4 (4-cylinder) diesel. The Perkins P6 (6-cylinder) model powers Hyster's 15,000, 16,000, 18,000, and 20,000-pound lift trucks. Mechanical descriptions, specifications, diagrams, and tables accompany the literature on each model.

To obtain the literature write to Hyster Co., 2902 N. E. Clackamas St., Portland 8, Oreg., or use the Request Card at page 18. Circle No. 41.

Concrete forming

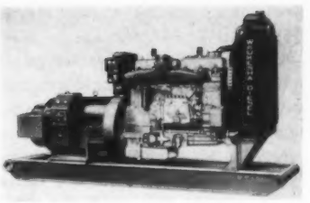
■ Atlas Compo forms, manufactured by the Irvington Form & Tank Corp., are described in a catalog. The forms have a welded high-tensile steel frame and a plastic-coated plywood face. A series of job photos show the erection and stripping processes. Typical methods of forming pilasters with Atlas forms are diagrammed. Form accessories are pictured and described.

To obtain the catalog write to the Irvington Form & Tank Corp., 20 Vesey St., New York 7, N. Y., or use the Request Card at page 18. Circle No. 143.

Generator sets develop up to 600 continuous kw

■ A new line of industrial engine-generator sets with capacities of from 50 to 600 kw is available from the Waukesha Motor Co. The units are known as Enginators.

Typical of the line is the 148 diesel series. Available in capacities of from 50 to 120 continuous kw rating, the 148 diesel is available as a normal diesel with standard crankshaft, a normal diesel with counterbalanced crankshaft, or a turbosupercharged diesel with counterbalanced crankshaft.



The Waukesha 148 diesel industrial Enginator set.

For further information write to the Waukesha Motor Co., Waukesha, Wis., or use the Request Card that is bound in at page 18 of this issue. Circle No. 16.

Hough wins IDI award for Payloader design

The Sixth annual award of the Industrial Design Institute has been presented to Jon W. Hauser, designer of the Model HH Payloader, a tractor-shovel manufactured by the Frank G. Hough, Co., Libertyville, Ill. One of three new pneumatic-tire four-wheel-drive tractor shovels introduced by the company in 1955, the Payloader is the first machine of its type to ever win the award.

The awards are the highest honors granted in the United States for industrial design.

Got a Road Widening Job?

Get more mileage per dollar with Blaw-Knox Road Wideners

Pave *concrete* without forms

Pave and finish *asphalt*

Spread any *aggregate* for base material

If you have a road widening job ahead of you, either as a contractor or a state engineer, you will be interested in equipment that will lower equipment investment, reduce labor requirement and give you the most work for the lowest cost. Blaw-Knox Road Wideners are ideal for any road widening or shoulder building program since they spread concrete, asphalt and any aggregate to an accurate line and grade. Hydraulic controls permit gradual widening of strip around curves when laying aggregate or asphalt. Vibrator attachments are available for any model to spread and finish concrete without forms. Large hopper, special conveyor belt and hydraulically controlled strike-off gate handle all types of material at a steady high capacity of up to 200 tons per hour. Tandem drive wheels on all models provide power to spare for pushing even the heaviest trucks up steep grades.

Blaw-Knox Dual Compression Trench Rollers are flexible and economical compactors for road widening jobs, too. They will roll widths from 20" to 39" and to depths of 24".

Your Blaw-Knox distributor can give you complete details on three models of Road Wideners and the Trench Roller.

BLAW-KNOX

BLAW-KNOX COMPANY
CONSTRUCTION EQUIPMENT DIVISION
40 CHARLESTON AVE., MATTOON, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 342

labor review

Carpenters were involved in the bulk of recent strikes throughout the country. A threatened strike of carpenters was averted last month in Cleveland, Ohio, when the Carpenters District Council and the Building Trades Employers Association agreed to terms of a new contract. The contract pledges the BTEA to use its "best efforts" to reduce the difference in wages between bricklayers and carpenters from 7½ to 5 cents an hour. The agreement will go into effect when the old contract expires May 1, 1958.

A "stay-off-the-job" campaign of mid-state Tennessee carpenters may come to an end if union and management can agree on how to divide a two-year, 42½-cent wage package. Prior to a settlement on 42½ cents, the union had been seeking an increase of 47½ cents over a two-year period, while management had offered 32½ cents for the same period. The union is holding out for a division that would give a boost of 15 cents an hour when the contract is signed, 15 cents more in eight months, and an additional 12½ cents during the last eight months of the pact.

Accepting the union's division with regard to time, the contractors are offering 10 cents upon signing, 15 cents eight months later, and 17½ cents for the final months of the contract. The strike has been in progress for more than a month now.

Labor gained points at both ends of the country during the month. Bricklayers in New York won increases of 45 cents an hour. A 25-cent-an-hour boost brings the current journeymen's rate to $4.05, and starting next year, this will increase by still another 20 cents.

A three-day strike of construction workers at Nellis Air Force Base, Las Vegas, Nev., ended with a "preliminary understanding". A painters union claimed that wages and working conditions in the area were being undermined by the award of a painting contract at the base to a firm from Salt Lake City, Utah. Under the "preliminary understanding", the union will be given the opportunity of presenting evidence to support its claim.

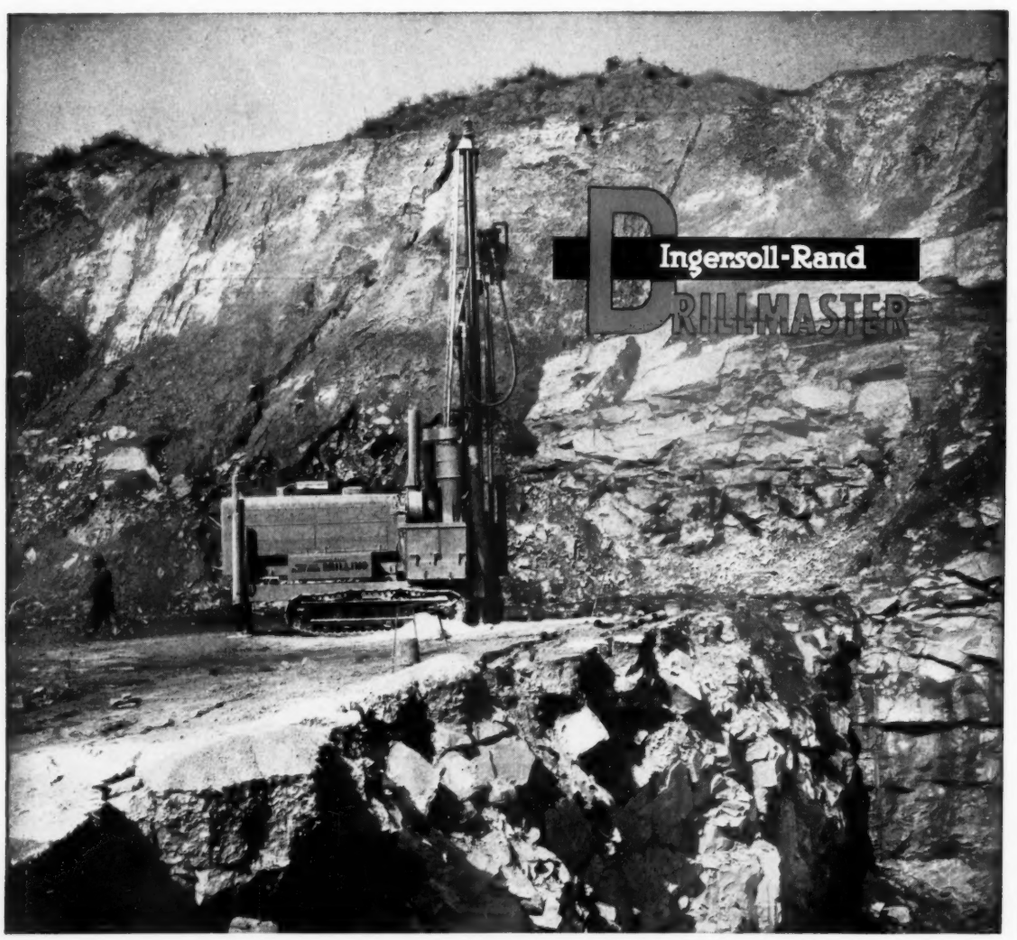
The strike of ironworkers and rodmen in the New Orleans, La., area is continuing. In an effort to explain its side of the disagreement to the general public, the Associated General Contractors of America published a full-page advertisement in the New Orleans "Times Picayune" to give a "statement of fact" about the building strike.

The AGC pointed out that it had been able to come to terms with building trades unions representing 9,500 workers, but that the continued strike of 500 rodmen and ironworkers is delaying $180 million worth of construction projects.

The average building craftsman, the AGC continues, is paid more than $100 a week, which means that union members in the community are suffering a loss of more than a million dollars for each week they remain out. The association also claims that its present offer would place New Orleans wages far above those of any other city in Louisiana or Mississippi, and would even be acceptable in Houston, Texas, which has the highest construction-wage rate in the South and Southwest.

The AGC also charges the ironworkers and rodmen with taking jobs out of town in order to support themselves during the stalemate, while other construction workers, unemployed because of the strike, are feeling the pinch.

Provision for a bricklayers' unemployment fund is included in a new five-year contract covering Albany, N. Y., bricklayers. Each member of the union will receive 10 cents worth of stamps for each hour worked during the pay period. It is then up to



4032 GROSS TONS PRODUCED DAILY!

SUPPLYING BLAST HOLES for three different quarries, the "down the hole" Depthmaster drill of the DRILLMASTER shown above is drilling limestone at a rate never before thought possible.

The formation is hard and very abrasive. Yet on a 50-foot face, the operator is sinking 180 feet of 6-inch holes per shift—on a 15-foot hole spacing pattern and 18-foot burden. That represents 4032 gross tons a day!

The Depth-Master "down the hole" drill actually goes down the hole with the bit. Applying full drilling impact directly to the bit, it eliminates the power losses in long drill steels. You can use the three-way DRILLMASTER also as a Rotary drill or as a Power-Master "out of the hole" drill.

Complete DRILLMASTER tower and accessories are available for tractor or truck mounting. For further details, write for Bulletin 4179.

5-387

Ingersoll-Rand
11 Broadway, New York 4, N.Y.

ROCK DRILLS · COMPRESSORS · AIR TOOLS · TURBO BLOWERS · CONDENSERS · PUMPS · OIL & GAS ENGINES

For more facts, use Reader-Reply Card opposite page 18 and circle No. 343

"AMERICAN TUBULAR"

THE NO. 1 NAME IN ELEVATING TOWERS

ALL TUBULAR MEMBERS GALVANIZED

Available with material platform and/or concrete equipment in Heavy Duty and Light Duty models.

AMERICAN TUBULAR ELEVATOR CO.
DIV. UNIVERSAL MFG. CORP.,
Zelienople 12, Pa.

For more facts, circle No. 344

each man to keep the stamps in books, which are provided by the employer. Stamps accumulated during the year may be redeemed at any time during the months of December, January, and February, the last day of February being their expiration date. Depository for the fund, the First Trust Co. of Albany, will sell the stamps to the employers and redeem them for members of the bricklayers union.

On the other side of the bricklayers' ledger is a civil anti-trust suit filed in the Federal District Court in Chicago against the bricklayers and plasterers unions and against a manufacturer of plastering machines. Charged with combining and conspiring for the unreasonable restraint of interstate trade, the unions are accused of having entered agreements with E-Z On Corp. to lease plastering machines rather than buy them outright. Under the alleged agreement, the units could not have been sublet, assigned to others, or leased to non-union contractors.

While the text of the Justice Department's complaint is not available, Attorney General Herbert Brownell, Jr., said that ". . . contractors who are eligible under the terms of the alleged conspiracy to lease such machines obtain an undue competitive advantage over other contractors. If proven, such restrictions run afoul of the Sherman Act."

In a recent precedent-setting decision, the District of Columbia Court of Appeals ruled that the "non-profit" nature of unions enables the National Labor Relations Board to refuse to exercise jurisdiction over cases involving persons employed by unions, even though the organizations may fit the definition of "employer" as it is given in the Taft Act.

The court's split decision comes after an appeal by the Office Employees International Union from an NLRB majority dismissal of unfair-labor-practice charges filed against Oregon units of the teamsters union. The office employees charged that the teamsters had violated every "employer" provision in the Taft Act in dealing with their office help. The charges centered on alleged moves of the teamsters to unseat the office employees as representative of the teamsters' office workers. The charges also state that the teamsters had discharged some employees.

An opinion written by Judge Prettyman with the concurrence of Judge Danaher emphasized that the teamsters were not operating for profit and therefore came under the ruling denying jurisdiction over non-profit enterprises. The opinion also stated that teamsters, as an employer, do not affect commerce within the meaning of the statute. The remaining majority member added to this his theory that the teamsters do not fit the definition of "employer" within the meaning of the Act.

The dissent at the NLRB came from now-chairman Leedom and member Rodgers, who held that the majority ruling had the "paradoxical" effect of allowing unions to "deny to their own employees the very rights and privileges which unions have so vigorously advocated and won for the employees of others."

Taking issue with his colleagues, Judge Bazelon stated that "employer", as defined by the Act with reference to unions, "sharply differentiates them (unions) from nonprofit organizations generally and subjects them to the jurisdiction of the Act in respect to their own employees."

Under the statute, unions are excluded from the definition of "employer" except "when acting as an employer". (Office Employees' Local 11 v. NLRB, CA-DC, No. 12896.)

The Louisiana Senate gave a 21 to 18 approval to a bill for the repeal of the state's "right-to-work" law, completing the legislative process. Indications are that Governor Earl K. Long will sign it, but should he neither sign nor veto it, the measure will automatically become law in Louisiana 20 days after its passage by the state Senate.

BUY BIG ORANGE AND YOU BUY THE BEST

Shackle Chain HOOKS

Use on "HIGH TEST" Chain

EXTRA STRONG

Even the pin is made of hi-strength steel and heat-treated.

SAVES TIME Can be attached anywhere on the job. Only a pair of pliers needed.

GRAB HOOKS Available for Chain Sizes 1/4" 5/16", 3/8" 7/16", 1/2" 5/8"

SLIP HOOKS Available for Chain Sizes 1/4" 5/16", 3/8" and 1/2"

ANCHOR and CHAIN Screw Pin SHACKLES

Forged of HI-STRENGTH STEEL Available in sizes 1/4" to 2". EXTRA STRONG —EXTRA TOUGH. Self-colored or galvanized Order from your Distributor or Write

MIDLAND INDUSTRIES, INC.

Cedar Rapids, Iowa

For more facts, circle No. 345

TIMKEN® bearings cut lubrication checks from once a day to once a month

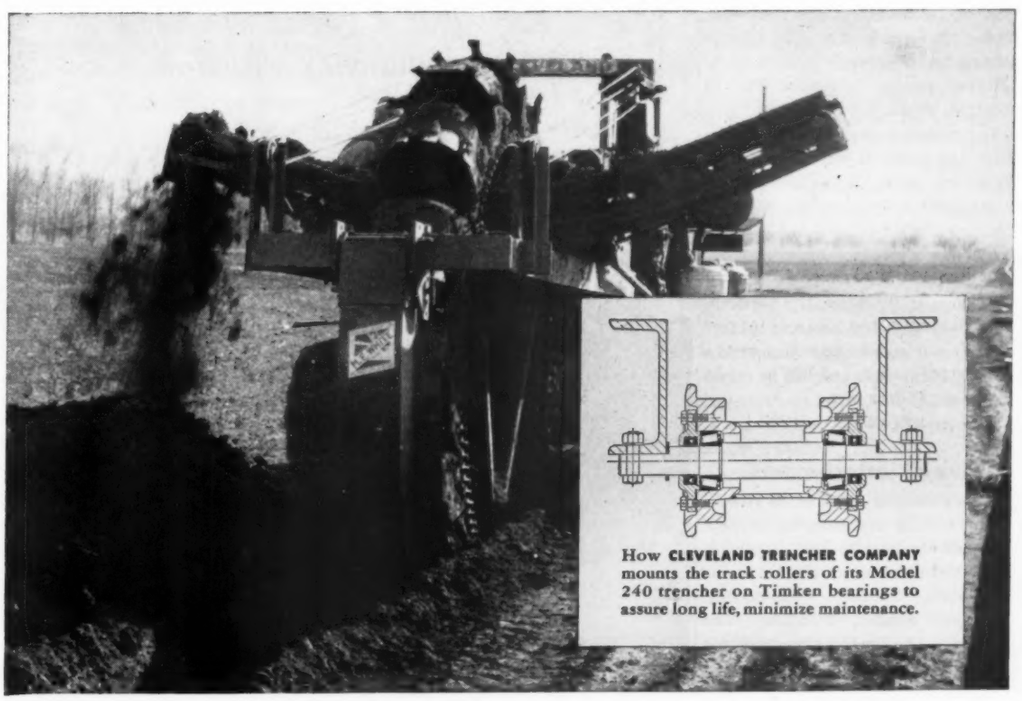
THIS Cleveland trencher's track rollers used to demand a daily oil check. Now, with Timken® bearings, one check a month is plenty. One reason: because of their high accuracy, Timken bearings keep housings and shafts concentric, allow the use of a more effective lubricant seal. The tapered construction of Timken bearings prevents end play in the track rollers, eliminates pumping action which would pull dirt in, force oil out.

Timken bearings practically eliminate friction in the trencher's rollers. Their geometrically correct design and precision manufacture give them a true rolling motion. They normally last the life of the machine because they're engineered for the job and made of Timken fine alloy steel.

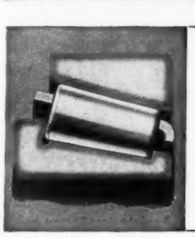
This "240" model trencher can dig a ditch 3′ wide and 6′ 3″ deep at 12 lineal feet a minute along wet right-of-way or up sloping hills. To take the combined radial and thrust loads, 68 Timken bearings were specified for the crawlers, transmission and front upper track. Because of their tapered design, Timken bearings take radial and thrust loads in any combination, hold shafts in rigid, positive alignment, assure smooth gear meshing under sudden starts and stops.

Always specify Timken tapered roller bearings when you buy or build machines. Look for the trade-mark "Timken" on the bearings. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian office: St. Thomas, Ont. Cable address: "TIMROSCO".

This symbol on a product means its bearings are the best.



How CLEVELAND TRENCHER COMPANY mounts the track rollers of its Model 240 trencher on Timken bearings to assure long life, minimize maintenance.



GREATER LOAD AREA

Because the load is carried on the *line* of contact between rollers and races, Timken bearings carry greater loads, hold shafts in line, wear longer.

Only Timken tapered roller bearings have these advantages: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. Timken fine alloy steels.

TIMKEN

TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL ○ NOT JUST A ROLLER ▭ THE TIMKEN TAPERED ROLLER ▭ BEARING TAKES RADIAL ◫ AND THRUST —◫— LOADS OR ANY COMBINATION —✳—

For more facts, use Reader-Reply Card opposite page 18 and circle No. 346

State bridge departments build more welded spans

There is an increasing trend toward the use of welded bridges in this country, according to a recent survey conducted by the James F. Lincoln Arc Welding Foundation, Cleveland, Ohio. Of the 39 state bridge departments responding to the survey, fifteen, or 38 per cent, were using an increasing number of welded highway bridges.

Another 13 states—accounting for 72 per cent of the sample—were using welding for such things as cover-plates, diaphrams, and shores. Many were considering the adoption of completely welded designs for more of their bridges.

The survey also showed that reported savings in steel in typical welded bridges ranged up to 20 per cent.

New firm to produce headed steel-wire units

A new firm, Prescon Corp., Corpus Christi, Texas, will manufacture headed cold-formed steel-wire units for stressing concrete. The firm was organized as a result of a merger of Prescon, Inc., of Paramount, Calif., and Prescon of Texas, a Corpus Christi company.

Guy Braselton, who had headed Prescon of Texas, will serve as president of the new organization. Karl H. Middendorf will be chairman of the board of directors.

LeTourneau to build steel offshore platform

R. G. LeTourneau, Inc., Longview, Texas, has contracted to build a $3¼-million steel offshore drilling platform for the Zapata Off-Shore Co. of Houston, Texas.

The second to be built by LeTourneau, the platform will be built near Vicksburg, Miss. Upon completion, scheduled for February 1, 1957, the platform will be floated 400 miles down the Mississippi River and out into the Gulf of Mexico.

Triangular in shape, the platform will measure 194 feet long and 152 feet wide. It will have an operating weight of 8,000,000 pounds and will be raised on three 145-foot legs.

Housing will also be provided.

Excavator attachments

■ A new catalog features 20 attachments for the multipurpose Gradall. Job photos, descriptions, specifications, and pictures are given. The attachments include ditch-digging, dredging, digging, trenching, and pavement-removal buckets; scouring and scraper blades; concrete buckets; material-handling boom extensions; and grapples.

To obtain this catalog write to the Gradall Division, The Warner & Swasey Co., 5700 Carnegie Ave., Cleveland 3, Ohio, or use the Request Card at page 18. Circle No. 144.

Electric sets

■ The many uses of Caterpillar electric sets, and reasons why they are suited to specific applications, are contained in a booklet. Descriptions of actual installations, job photos, and cutaway drawings are included. Data is given on the company's generators. The booklet is also available in French, Spanish, and Portuguese.

To obtain Form No. 31922 write to the Caterpillar Tractor Co., Peoria, Ill., or use the Request Card at page 18. Circle No. 70.

Compaction unit

■ Maximum compaction of granular-base materials and bituminous surfacing can be had with the Vibra-Tamp, according to a bulletin from the manufacturer, the Barco Mfg. Co. Operating on speeds up to 50 fpm, the self-propelled unit tamps up to 750 square yards per hour. Specifications are listed in the bulletin.

To obtain Bulletin No. 630 write to the Barco Mfg. Co., 500 N. Hough St., Barrington, Ill., or use the Request Card at page 18. Circle No. 65.

Rubber Bureau appoints

The Natural Rubber Bureau, Washington, D. C., has appointed J. York Welborn director of its research laboratory. He had formerly been the assistant head of the bituminous material laboratory of the BPR.

Rebuilding equipment

■ Rebuilding and repairing tractor, bulldozer, shovel, and other heavy-equipment parts with welded manganal (a combination manganese-nickel steel) is detailed in literature from the Stulz-Sickles Co. Pen and ink sketches accompany descriptions of the application procedure for welding rollers, idlers, grousers, buckets, dipper teeth, and crusher parts.

To obtain the literature write to the Stulz-Sickles Co., 134-142 Lafayette St., Newark 5, N. J., or use the Request Card at page 18. Circle No. 91.

88% of all Aggregate and Bituminous Plants on Kansas Turnp

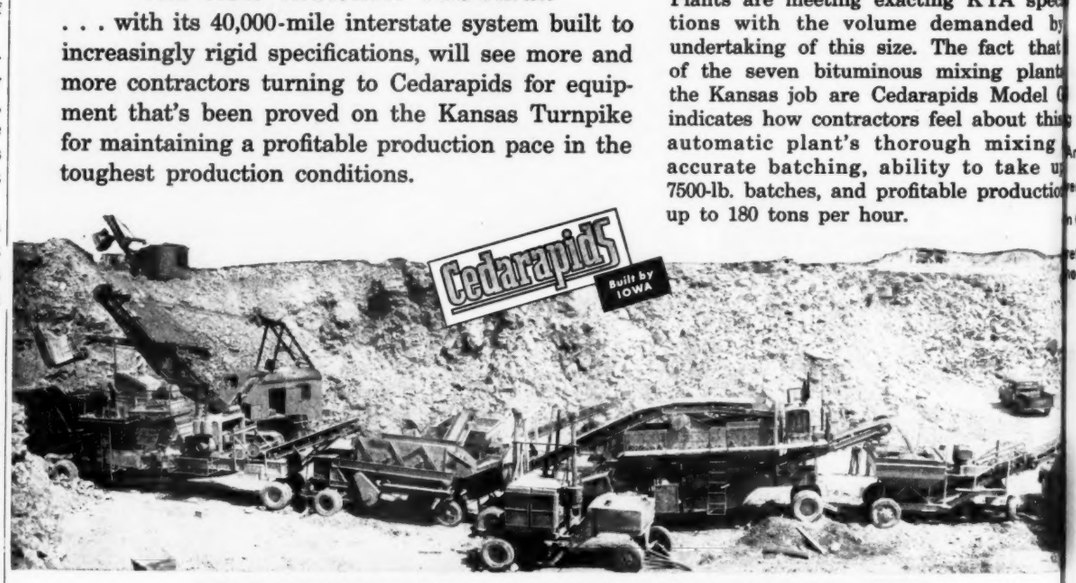
28 OUT OF 32 PLANTS DEPEND ON CEDARAPIDS for the equipment that can best meet exacting turnpike specifications. Along the 236 miles of Kansas Turnpike, 25 aggregate producing plants are turning out over 12,000,000 tons of rigidly specified base rock, granular subbase, sand, gravel, etc. *All but two of these plants use Cedarapids crushing or screening equipment!* Out of seven bituminous mixing plants supplying asphaltic concrete, *five are Cedarapids!*

Five G60's Supply Most of The Asphaltic Concrete

Five big Cedarapids G60 Bituminous M Plants are meeting exacting KTA spec tions with the volume demanded b undertaking of this size. The fact that of the seven bituminous mixing plant the Kansas job are Cedarapids Model G indicates how contractors feel about thi automatic plant's thorough mixing accurate batching, ability to take u 7500-lb. batches, and profitable productio up to 180 tons per hour.

THE NEW HIGHWAY PROGRAM

. . . with its 40,000-mile interstate system built to increasingly rigid specifications, will see more and more contractors turning to Cedarapids for equipment that's been proved on the Kansas Turnpike for maintaining a profitable production pace in the toughest production conditions.



RENO CONSTRUCTION CO. PRODUCES 250 TONS PER HOUR

Using a Cedarapids Portable Double Impeller Impact Breaker Primary, a scalping screen unit, and a Portable Hammermill Secondary to produce KTA specification aggregate, Reno Construction Company's production ranges between 200 and 250 tons per hour. The Overland Park, Kansas contractor is operating two Cedarapids Unitized Plants near Aikman and a G60 Bituminous Mixing Plant near Chelsea. Reno owns many other Cedarapids portable units as well as stationary plants

SEE YOUR CEDARAPIDS DISTRIBUTOR FOR HELP WITH YOUR TURNPIKE PROBLE

The Cedarapids Line of Equipment Includes:

PORTABLE AND STATIONARY CRUSHING, SCREENING AND WASHING PLANTS FOR STONE, GRAVEL AND SAND • BELT CONVEYORS • VIBRATOR AND REVOLVING SCREENS • FEEDERS • HAMMERMILLS • DOUBLE IMPELLER IMPACT BREAKERS • BATCH TYPE AND CONTINUOUS TYPE BITUMINOUS MIXING PLANTS • DRIERS • DUST COLLECTORS • VIBRATING SOIL COMPACTION UNITS • MOTORIZED HEAD PULLEYS

Built by Iowa . . . Sold the World Over

Atlas Copco's NT 9 MV diesel-powered 2-cylinder, 2-stage, portable compressor delivers 105 cfm and is designed for a normal working pressure of 100 psi and a maximum of 120 psi.

Firm offers compressors, pneumatic-powered tools

■ A 53-pound motor drill, a 105-cfm portable diesel-powered compressor, and an integral leg drill are among the products available from Atlas Copco Eastern, Inc., a United States sales company for a world-wide organization. The company manufactures compressors and pneumatic-powered equipment.

The Cobra motor drill is powered by a 1-cylinder, 2-stroke gasoline engine that uses a 16-to-1 mixture of gasoline and oil. It can drill to a maximum depth of 13 feet in hard rock at the rate of 24 feet per hour, and consumes ⅓ gallon of fuel per hour. The fuel tank holds 1⅔ quarts. According to the company, the tool will drill 1,300 feet of hole before it needs overhauling.

A compressor mounted on the drive piston supplies air for flushing the hole. Operation as much as 45 degrees off the vertical is possible through the use of a floatless carburetor. Drill steels are sharpened with a small grinder which attaches to the drill through a flexible shaft. Optional equipment includes a 17-foot-long flexible exhaust hose for use in deep drilling work, a silencing attachment, and a knapsack-like frame for carrying the 53-pound unit on a man's back. The Cobra can be converted for pavement breaking with three minor adjustments.

The standard NT 9 MV portable compressor is operated by a Deutz 3-cylinder, air-cooled, diesel engine that develops 37½ horsepower and reportedly is not hampered or affected by temperatures as low as minus 40 degrees.

The Cobra self-powered motor drill and breaker developed by Atlas Copco can drill up to 24 feet per hour into hard granite. Weight of the gasoline-powered drill is 53 pounds.

The compressor is a 2-cylinder, 2-stage, air-cooled unit. It is disengaged by means of an automatic centrifugal clutch while the engine is being started. In cold-weather decompression levers may be set to keep the diesel's valves open when the engine is initially cranked.

All controls on the Lion integral leg drill are located on the back head. The stinger is double-acting, which makes it quickly detractable at the touch of the spring-release lever. In granite, the Lion performs at the rate of nearly 2 fpm with a 1⅜-inch bit. It consumes 140 cfm and weighs 100 pounds complete. A sinking back head is available to convert the drill into a 60-pound sinker.

Two of the RH 571-31 medium-duty jackhammers can be operated off a 105-cfm compressor. The unit weighs 40 pounds and can drill to a depth of 21 feet in hard rock.

For further information write to Atlas Copco Eastern, Inc., 151 Linwood Ave., Paterson 25, N. J., or use the Request Card at page 18. Circle No. 169.

CEDARAPIDS EQUIPMENT

Difficult Specification Problems Solved by Contractor Ingenuity and CEDARAPIDS Versatility

g the toughest turnpike specs s complicated by extremely diffi- rushing conditions. Some native one, with 8% moisture content, to pack rather than crush. In quarries, clay topsoil in the al makes it difficult to meet d PI limits. A common problem tting rid of the high percent- of dirt and objectional fines ntered.

k these problems, many contractors turned to *breaking*, instead of crushing, the saturated, rubbery rock with Cedarapids Double Impeller Impact Breakers . . . wasting contaminating fines before primary crushing by use of Cedarapids vibrating grizzlies discharging onto waste conveyors . . . using Cedarapids Portable Screening Units or Screens ahead of secondary crushers to scalp off objectionable fines . . . combining flexible Cedarapids washing equipment to produce clean aggregate.

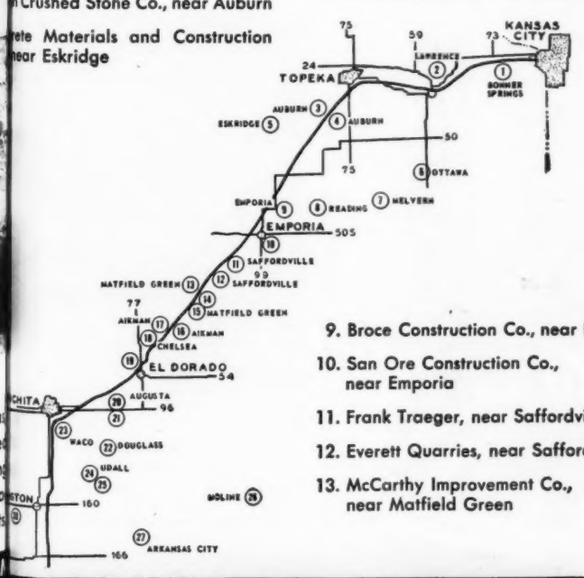
Kansas Turnpike Aggregate Specifications

Screen	Sub-Base Rock (% Passing)	Base-Course Rock (% Passing)*
2 in.	100	100
1½ in.	100-75	100-70
1 in.	100-60	100-60
½ in.	95-45	
⅜ in.		95-39
No. 4	80-25	75-25
No. 10	65-17	55-17
No. 40	40-8	30-8
No. 200	10-0	10-0

CEDARAPIDS OWNERS ON THE KANSAS TURNPIKE

Quarries, near Bonner Springs
Anderson, Inc., near Lawrence
r Construction Co., near Auburn
n Crushed Stone Co., near Auburn
ete Materials and Construction ear Eskridge

6. Concrete Materials and Construction Co., near Ottawa
7. Dusenbury Quarries, near Melvern
8. Nelson Brothers, near Reading



9. Broce Construction Co., near Emporia
10. San Ore Construction Co., near Emporia
11. Frank Traeger, near Saffordville
12. Everett Quarries, near Saffordville
13. McCarthy Improvement Co., near Matfield Green
14. McCarthy Improvement Co., near Matfield Green
15. Dillon Stone Company, near Matfield Green
16. Reno Construction Co., near Aikman
17. Reno Construction Co., near Aikman
18. Reno Construction Co., near Chelsea
19. George Meyers Inc., near El Dorado
20. Badger Material Co., near Augusta
21. Amis Construction Co., near Augusta
22. Carr Rock Products Co., near Douglass
23. Imperial Paving Co., near Waco
24. H. D. Youngman Construction Co., near Udall
25. Anderson Oxandale Crushed Stone Co., near Udall
26. Concrete Materials and Construction Co., near Moline
27. San Ore Construction Co., Arkansas City
28. Peter Kiewit Sons' Co., near Wellington

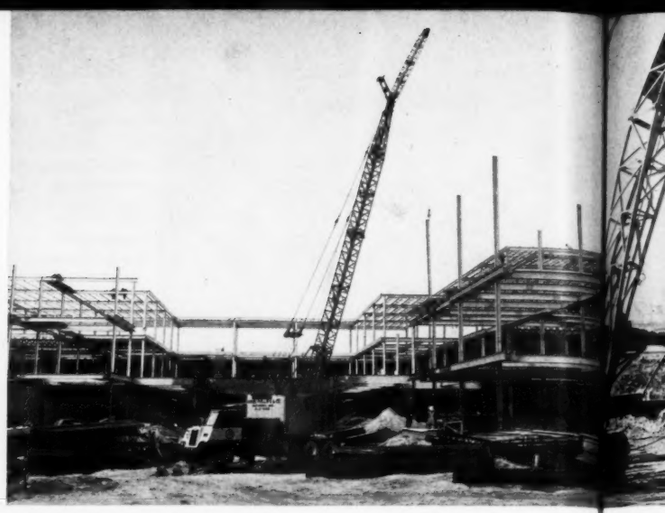
OWA MANUFACTURING COMPANY

Cedar Rapids, Iowa, U.S.A.

←For more facts, circle No. 347

Construction camera

A 20-FOOT CUT was made to level a hill that formerly stood on the site of the Lincoln High School addition in Manitowoc, Wis. Now, with the building completed, part of the material is brought to a 25-degree slope against the school by an International Drott TD-9 Skid-Shovel.



MONDAWIN—the Baltimore, Md., $8 million two-level shopping center is being built by William L. Crow Construction Co., New York City. A steel column, part of the 2,700-tons of steel going into the project, is erected with a Bay City Crane with 75-foot boom and 30-foot jib.

THE ciate sheet box

HERE'S PROOF! GENERAL

STRONGER-THAN-STEEL

NYGEN® TIRES

save more money per hour on any job!

GENERAL L. C. M. 24 PLY 16.00-24/25 vs COMPETITIVE BRANDS*

COST PER TIRE HOUR OF SERVICE

AVERAGE COMPETITIVE	.259
GENERAL LCM NYGEN	.224

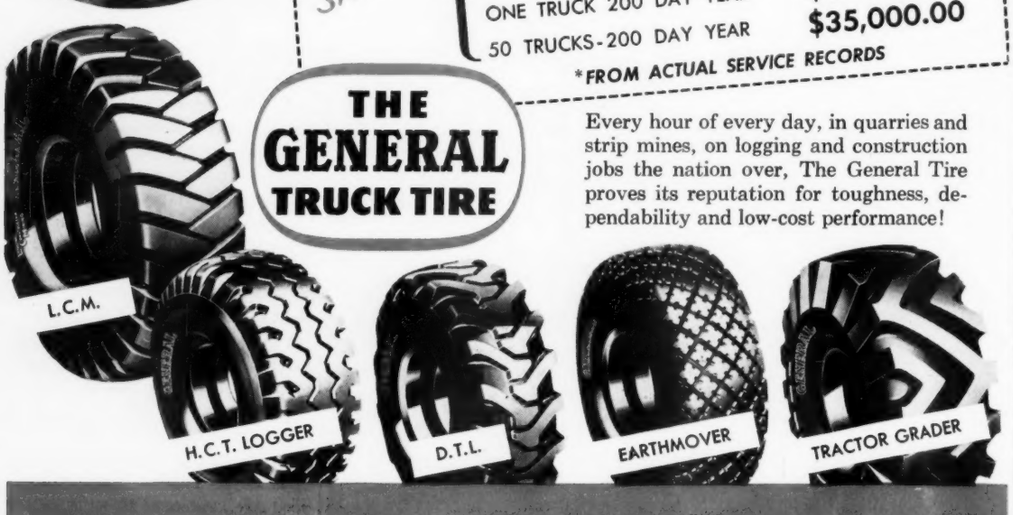
SAVINGS

PER TIRE PER HOUR	$... .03½
PER HOUR 10-TIRE TRUCK	$... 0.35
ONE TRUCK 10-HOUR DAY	$... 3.50
ONE TRUCK 200 DAY YEAR	$... 700.00
50 TRUCKS-200 DAY YEAR	$35,000.00

*FROM ACTUAL SERVICE RECORDS

THE GENERAL TRUCK TIRE

Every hour of every day, in quarries and strip mines, on logging and construction jobs the nation over, The General Tire proves its reputation for toughness, dependability and low-cost performance!



THE GENERAL TIRE & RUBBER COMPANY • Akron, Ohio

For more facts, use Reader-Reply Card opposite page 18 and circle No. 348

ARBA task forces gage road-building capacity

The results of studies made to determine the ability of various segments of the highway-construction industry to carry out a large volume of work under an expanded highway program are detailed in the 1956 edition of the Task Force Reports published by the American Road Builders' Association.

The reports cover planning and design, materials and supplies, the construction industry itself, and machinery and equipment. The reports are confident that planning and design, and contractors, materials and supplies will not present problems that will hold up the program. The current short supply of steel and cement should be relieved next year by expanded production facilities, according to the Task Force report on materials. The report covering machinery states that equipment manufacturers are "confident" of the industry's ability "to satisfy whatever

equip level all met.

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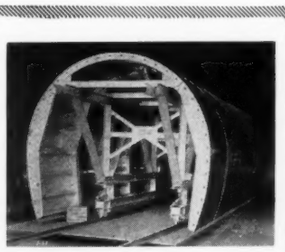


MAYO STEEL FORMS

. . . SPEED TUNNEL JOBS

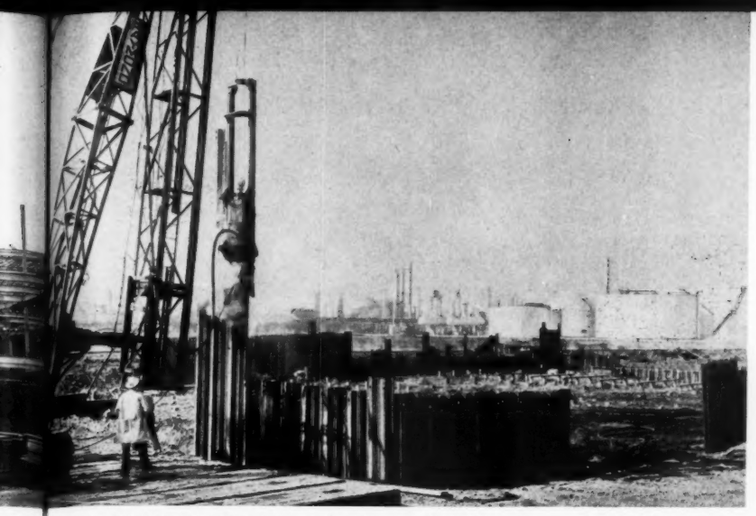
Mayo produces all types of Tunnel Forms—telescopic, non-telescopic, separate sidewall and arch, single unit, full round forms for monolithic pours, etc. Each is designed for the exact requirements of the job—be it Tunnel, Sewer or Conduit!

Write for our FREE Bulletin No. 15 or send details.

STEEL FORMS • HEADFRAMES • MUCK BINS • SHIELDS • AIR LOCKS • LOCOMOTIVES • MINE CARS • GROUTERS

MAYO TUNNEL AND MINE EQUIPMENT LANCASTER, PENNA.

For more facts, circle No. 349



THE EXPANSION PROGRAM at the Associated, Calif., refinery of Tide Water Associated Oil Co., involves building in the dry a separator for a fluid coker. L. B. Foster sheet piling is driven into the dense clay by a McKiernan-Terry hammer to form a box with an 850-foot perimeter.

WORKING IN THE LOW-LYING LAND near Port Charlotte, Fla., a Bucyrus-Erie 38-B dragline excavates a finger to a canal near a 5,000-acre development of new homes. The contractor on this excavation work is the Hooper Construction Co., Inc., of Miami, Fla.

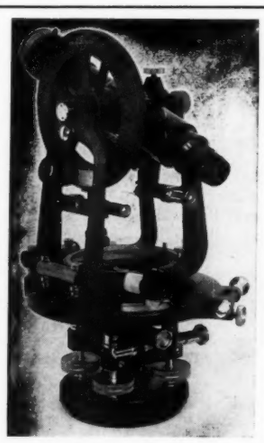
equipment needs arise" from a high-level highway program, even while all normal requirements are being met.

Copies of "The Highway Construction Industry in a Long Range National Highway Program" are priced at $2 each and may be obtained from the ARBA, World Center Building, Washington 6, D. C.

Welding products

■ Tisco Timang manganese-nickel steel welding products, manufactured by the Taylor-Wharton Division of Harsco Corp., are described in a bulletin. Various models pictured and described are welding rods, hot-rolled plates, special-shaped hot-rolled tractor-grouser bars, wedge and applicator bars, and tooth repointers. Price and size tables are given.

To obtain Bulletin 3-56-1M write to Taylor-Wharton Division of Harsco Corp., High Bridge, N. J., or use the Request Card at page 18. Circle No. 92.



UMECO 5¾" SURVEY TRANSIT
Model 575 Only $515.
PRECISE • RUGGED • RELIABLE
Fully Guaranteed
Complete line of transits, levels, compasses, planimeters. Folder on request.
UMECO OPTICAL DIVISION
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Exclusive Western Distributor:
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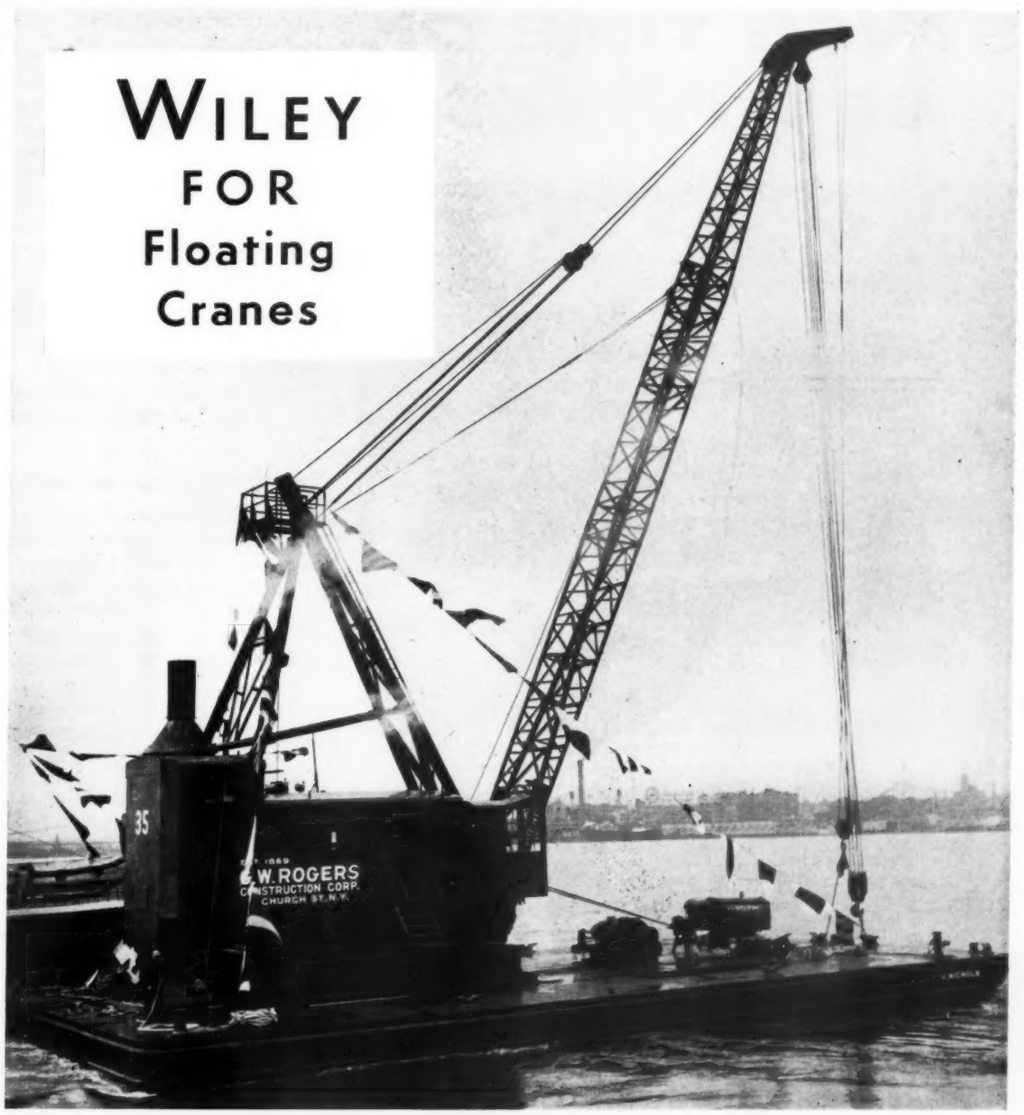
1224 S. Hope, Los Angeles

For more facts, circle No. 350



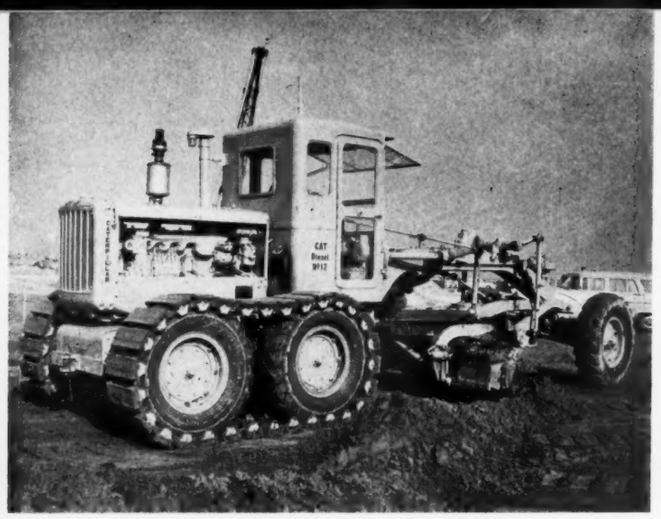
One of three Wiley Floating Cranes owned and operated by the George Rogers Construction Corporation for harbor and pier maintenance work in the New York Harbor.

WILEY MANUFACTURING COMPANY
BARIUM STEEL CORPORATION SUBSIDIARY

P.O. BOX 97, PORT DEPOSIT, MARYLAND **PHONE: PORT DEPOSIT DRAKE 5-2111**

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 351

Construction camera



NEW YORK is constantly keeping Idlewild Airport in New York City up-to-date. A $162,000 fuel-truck parking area is under construction here. The Cat No. 12 motor grader, equipped with new Mudlark Tire-Tracks designed by Crawler Tire-Tracks, Inc., New York City, is spreading base material for the area.

A NOVEL SETUP turns out transit-mix concrete for erecting buildings at a freight classification yard at Minot, N. Dak. Cement goes from cars to the weigh hopper of the CMC plant via a Mayrath conveyor—which usually handles grain—while a Ford tractor with front-end loader charges the bins.

PART
Flore
TC-12
ville,

SAVES TIME ON VENT LINES

Naylor Spiralweld pipe is "made-to-order" for ventilating jobs in construction service.

Its light-weight makes for easy handling. It saves time on installation . . . especially with the one-piece Naylor Wedge-Lock coupling which can be joined with only a hammer. Lines hug the wall . . . can be assembled with only one side of the pipe in the open . . . and extended readily as work progresses.

You save money, too, because the greater collapse strength inherent in the Naylor structure permits the use of lighter gauge material without sacrifice of performance.

Write for the complete story. Ask for Bulletins No. 507 and No. 514.

NAYLOR PIPE

NAYLOR PIPE COMPANY
1270 East 92nd Street
Chicago 19, Illinois

Eastern U. S. and Foreign Sales Office: 350 Madison Avenue, New York 17, New York

For more facts, use Reader-Reply Card opposite page 18 and circle No. 352

Incremental vehicle tax discussed in HRB booklet

The incremental method of taxing motor vehicles is discussed in five papers published in Bulletin 121 of the Highway Research Board, "Allocating Motor-Vehicle-Tax Responsibility by the Incremental Method."

These papers, presented as a symposium before the board, take up the question of taxing vehicles by weight groups. One group is basic and this tax is charged to all vehicles. The cost of each successive increment of pavement thickness is charged to vehicles requiring it, under this method.

Papers deal with the concept of the method and its application, some problems that arose when Kentucky was preparing for the study, and a comparison of the cost-function method developed by the American Trucking Association and the incremental and ton-mile methods. An outline of the method as used in Minnesota, together with suggestions for modifying the method, are included in one of the papers. Another deals with a highway cost-allocation project in the state of Washington.

Copies of the bulletin, priced at 75 cents each, may be secured from the Highway Research Board, 2101 Constitution Ave., Washington, D. C.

Safety awards presented to Goose Bay contractors

Two safety awards, the Award of Merit and the Award of Honor, were presented to the contractors working at the U. S. Air Force base at Goose Bay, Labrador. Drake-Merritt, a joint-venture firm of Johnson, Drake & Piper International Corp., Minneapolis, Minn., and Merritt-Chapman & Scott Corp., New York, N. Y., received the awards on the basis of its safety record in 1955.

Clyde Newcomb, project manager, accepted the awards on behalf of the firm.

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FOR EFFICIENT, TIME-SAVING ECONOMICAL MEASURING!

Actual working conditions prove that measuring time can be cut to a fraction with a Rolatape Measuring Wheel.

ROLATAPE MODEL #400—Widely used by Telephone Companies, Utilities, Paving Contractors, Land Appraisers, etc. It's four-foot circumference measuring wheel gives accurate measurements even on fairly rough terrain. Constant logging information in plain view . . . Can be operated from car at slow speed. . . . Light weight and sturdy . . . calibrated wheel measures from zero up to nearly nineteen miles. . . . Counter can be reset at any distance.

ROLATAPE MODEL #200—For interior and outside use. Widely used by Real Estate Men, Appraisers, Roofers, Traffic Officers, etc. A built-in totalizer records measured distance in feet and inches. Measures line-to-line and wall-to-wall. . . . Vertical measurements are easy to make . . . simple to operate. Extend handle, guide . . . Rolatape measures and records.

ROLATAPE MODEL #600—For cross-country and acreage measurements, or measuring conduit distances where rough terrain ordinarily creates traction problems. Can be mounted from rear of jeep, tractor, or any slow moving vehicle. Special hitch available. Measures up to nearly nineteen miles. Records as it measures.

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ROLATAPE INC.

FACTORY: 1741 FOURTEENTH STREET, SANTA MONICA, CALIF.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 353

PART OF THE EARTHWORK for the relocation of Alabama State Highway 2 near Florence is handled by a Caterpillar DW21 scraper that is push-load by a Euclid TC-12 tractor. The contractor on this grading work is Oman Construction Co., Nashville, Tenn.

REPAVING, done with plant-mix, makes a 4-lane divided highway out of U. S. 62 near Lorenzo, Texas. C. Hunter Strain, San Angelo, Texas, contractor on the 20-mile project, uses a new Pioneer Vibromatic paver to put down about 33,000 tons of bituminous surfacing.

Textbook presents study of foundation engineering

A thorough study of all the aspects of foundation engineering is presented in "Foundations—Design and Practice", by Elwyn E. Seelye. Complete in one volume, the text discusses types of foundations and soils, footings, pile caps, design data, elevations, foundations and retaining walls, bridge piers and abutments, and dams and reservoirs. Individual chapters are devoted to the evaluation of the bearing power of soil, waterproofing, construction techniques, and embankments and pavements.

Based on the theory that foundation engineering requires a knowledge of theoretical design principles and practical construction know-how, the book is intended for practicing design engineers, builders, architects, and inspectors, as well as for students. Economic studies, to enable the engineer to choose between various types of structures, and a study of specification forms are included.

Diagrams, photographs, and tables are used in abundance throughout the text. Check lists and a glossary simplify reading. The book, priced at $16, may be obtained from the publisher, John Wiley & Sons, Inc., 440 Fourth Ave., New York 16, N. Y.

New diesel pile hammer is announced

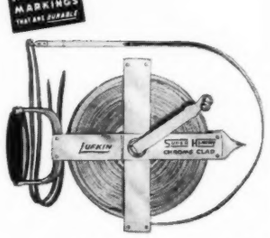
■ The McKiernan-Terry diesel pile hammer, Model DE-30, is presented in new literature. According to the specification listing, the 6,500-pound unit averages 50 to 60 blows per minute. Recommended pile size for economical operation is 1 to 2 tons; and recommended pile bearing, 40 to 90 tons. Operational and design features are briefly described.

To obtain the literature write to McKiernan-Terry Corp., 100 Richards Ave., Dover, N. J., or use the Request Card at page 18. Circle No. 85.

LUFKIN

SUPER HI-WAY DRAG TAPE

EASY TO READ MARKINGS THAT ARE DURABLE



Extra heavy tape steel is etched away to leave full strength line with markings raised in bold relief. Raised protective edges and jet black background provide long wear and make markings easy to read. Chrome Clad finish resists rust and corrosion, won't chip, crack or peel. Each foot marked — end feet graduated to 100ths ft. 100 - 200 - 300 foot lengths.

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TAPES • RULES
PRECISION TOOLS
FROM YOUR SUPPLY STORE
THE LUFKIN RULE COMPANY
Saginaw, Michigan

BETTER MEASURE WITH LUFKIN

398

For more facts, use Reader-Reply Card opposite page 18 and circle No. 354

"We cut travel 25%... handle more jobs with RCA 2-Way Radio"

. . . declares J. M. Corbett, President
J. M. Corbett Co., Highway Contractors, Chicago

Torrential rains that flood the area surrounding Lake Michigan, causing soil erosion, also create immediate problems for the Corbett construction crews employed by the city for rebuilding the storm-torn roads. According to Mr. Corbett, "In emergencies we must be prepared to move vehicles at the drop of a hat and our RCA 2-Way Radio system provides the answer. Concrete deliveries can be shifted quickly to meet new conditions and trucks can be re-routed, with a minimum of backtracking. Elimination of needless driving saves on equipment wear and tear. We estimate we cut travel time 25% with radio, and our equipment is freed to handle more jobs. Adding all these together, radio pays for itself over and over. It's a big selling point, too, with new customers. We wouldn't be without it!"

Concrete plant, radio equipped trucks.

WHY ARE THE LEADERS CHOOSING RCA 2-WAY RADIO?

They are impressed with the years of RCA leadership in radio and electronics and with RCA's fine service organization. Superior tubes, crystals and microphones for clearer talking, longer life. Heavy gauge steel case for rugged use.

RCA DISPATCHER 2-WAY RADIO TO DRIVER

Get the whole story—mail coupon

RADIO CORPORATION OF AMERICA
Communications Products, Dept. H-277, Building 15-1, Camden, N. J.
In Canada: RCA VICTOR Company Limited, Montreal

☐ Please send me complete information on the use of RCA 2-Way Radio in construction.
☐ Have RCA Communications Specialist make a FREE RADIO SURVEY of my business.

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 355

Construction camera

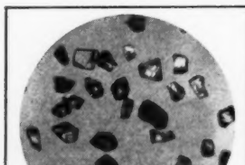
A STONE'S THROW from the nation's capitol building, Bethlehem Steel Co., ironworkers erect the skeleton of the new $20 million senate office building that will give legislators more working space.

KNEE DEEP IN MUD, a crew sets up an American Bridge guy derrick in the basement of the $5 million Kansas State office building at Topeka with the aid of a Lorain Moto-Crane.

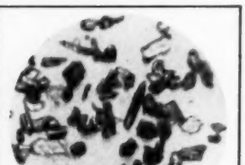
A GIANT OF A LIFT—a 109-ton pressure vessel for the Watson, Calif., refinery of Richfield Oil Corp.—is handled by a 170-ton Manitowoc 4500 Speedcrane.

CHUNKY DIAMOND PARTICLES

Important to Diamond Blade Life



Here's what a good, hard-working diamond particle looks like . . . the kind you consistently find in every Felker Segmented Wheel.

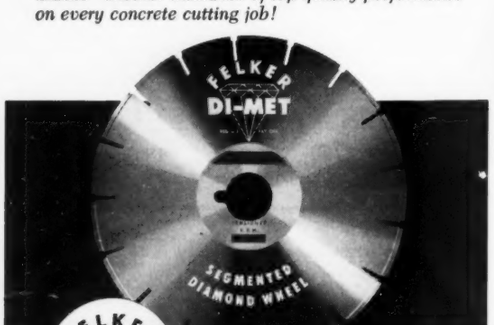


Long, skinny splinters can't withstand heavy impact loads. Loss of cutting speed and blade efficiency are the natural outcome.

Another reason for Felker Segmented Blade leadership in concrete cutting

At Felker Manufacturing Company we go to a lot of effort to make the best diamond wheels you can buy. A most important step in blade manufacture is reduction of the diamonds to correct particle size. Simply shattering the diamonds isn't enough . . . this produces a variety of particle shapes which is disadvantageous. *Longest life and most work result when the tiny diamonds are compact in shape, of nearly uniform length, breadth and thickness.* This structure increases strength, resists fracturing and minimizes loss of diamonds when wheel is in use. These particular diamond shapes also possess a myriad of sharp cutting edges which increase cutting speed of the blade.

By developing special crushing and separating techniques at Felker Manufacturing Company, the weaker diamond splinters, flakes and useless "fines" are eliminated. Only carefully graded, properly shaped diamond particles ever go into Felker Segmented Blades—*another insurance of top quality performance on every concrete cutting job!*



FELKER DI-MET SINCE 1924

FELKER MANUFACTURING CO.
TORRANCE, CALIFORNIA

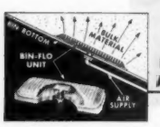
World's largest and oldest manufacturer of diamond abrasive cut-off wheels and machines.

For more facts, circle No. 356

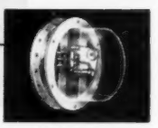
BULK MATERIAL CONTROL under Pressure or Vacuum

New Roto-Bin-Dicator mounts outside bin, at any angle, for bin level signaling or machinery control. Material loads on paddle actuate Micro switch in motor housing. Flexible paddle shaft permits use with large or lumpy materials. **Explosion-Proof U. L. Listed Units Now Available.**

ROTO-BIN-DICATOR



BIN-DICATOR
BIN-FLO AERATOR



Low pressure air diffuser assures steady flow of fine, dry materials that tend to pack in storage.

The original diaphragm-type bin level indicator for all ordinary applications.

Complete Illustrated Literature FREE

THE BIN-DICATOR CO.
13946-M Kercheval • Detroit 15, Mich.
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WE SELL DIRECT • PHONE ORDERS COLLECT

For more facts, circle No. 357

Leading Contractors Demand the Genuine "Mobile Office"

Ideal for—Offices • Drafting Rooms • Paymasters • Timekeepers • Engineers and many other uses conforming to the contractors' particular needs.

Mobile Offices come equipped with drafting tables, desks, lavatory, air conditioning (optional), heater, etc., and can be equipped to your specifications. Units are built for rugged use. Many of these units are being used by leading contractors throughout the U. S.

Write today and get the complete facts on how mobile units can work for you.

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For more facts, circle No. 358

Black & Decker appoints

Two new district managers for its hardware division have been appointed by Black & Decker Mfg. Co., Towson, Md. William A. Beach will assume the management of the Pittsburgh, Pa., area, while Walter H. Bramman will head the Buffalo, N. Y., district.

The firm has also formed a new sales department to be known as the service sales division. Formed to increase the scope and quality of business in the firm's repair branches, the service sales division will be headed by John P. Spain. The division should be in operation by October.

Legal load manual

■ Truck and trailer size and weight restrictions for the 48 states and the District of Columbia are compiled in a pocket-size book available from the Four Wheel Drive Auto Co. Data is also included on the permissible gross weights on single units or combination units. Each state's regulations have been checked and authenticated by a highway or motor-vehicle official of the state.

To obtain the booklet write to Four Wheel Drive Auto Co., Clintonville, Wis., or use the Request Card at page 18. Circle No. 79.

American Cyanamid appoints

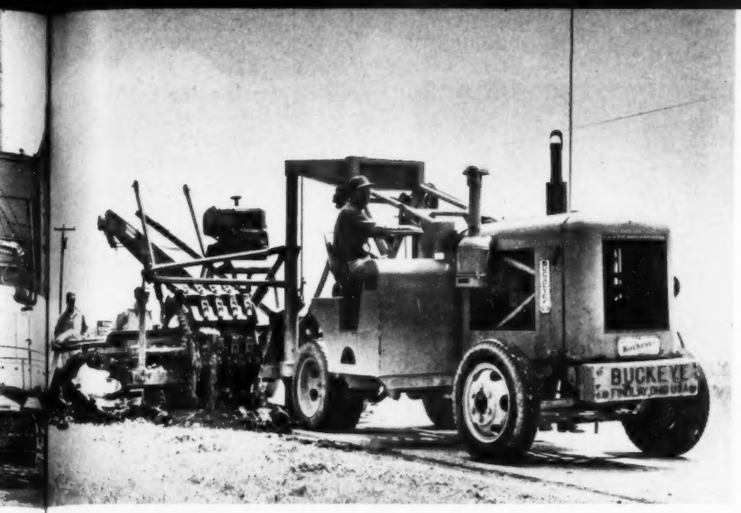
Four appointments have been made within the new engineering and construction division of American Cyanamid Co., New York, N. Y.

T. P. Forbath will serve as assistant general manager and Dr. J. F. Bourland as technical director. The new manager of operations is G. J. Forney. Anthony C. McAuliff is the general manager of the division.

Blaw-Knox names manager

The Blaw-Knox Co., Pittsburgh, Pa., has appointed A. H. Jackson to the post of vice president and general manager of its equipment division plant in Blawnox, Pa. He succeeds Capt. E. C. Rook.

Jackson has been associated with Blaw-Knox, whose home office is in Pittsburgh, Pa., since 1927.



TRENCH EXCAVATION for a widening strip along Missouri State Highway 54 is done by a Gar Wood Buckeye trencher powered by a Detroit diesel 3-71 engine. Trinidad Asphalt Mfg. Co., St. Louis, Mo., is excavating 30-inch strips on either side of the 13-mile stretch as the first step in this job.

A 1-YARD BUCKET of concrete is spotted for a pour on an East Texas Freeway overpass by an Insley WB truck-mounted crane with 60-foot boom. Concrete for the structure is delivered to the E&E Construction Co., South Houston, Texas, by truck mixers. The Texas State Highway Department is supervising the work.

Convertible transit-level

■ The Berger convertible transit-level, of brass and bronze construction, is detailed in a folder from the company. Equipped with a 3-foot short focus, the transit has a plate level in addition to the telescope vial. Job photos show the unit used in laying out a building site, marking batter boards, measuring ceiling height, and setting grades. Other instruments made by Berger are briefly described.

To obtain Folder CB 356 write to C. L. Berger & Sons, Inc., 37 Williams St., Boston 19, Mass., or use the Request Card at page 18. Circle No. 67.

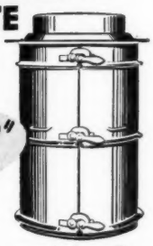
Sand, gravel cleaner

■ The Wemco-Remer Jig, a unit that cleans sand and gravel to meet the tight specifications of certain construction projects, is described in a bulletin from Western Machinery Co. Capacity range for the standard cleaner is 40 tons per hour.

To obtain Bulletin No. J2-B1 write to Western Machinery Co., 760 Folsom St., San Francisco 7, Calif., or use the card at page 18. Circle No. 160.

CALL ON Quinn For QUALITY CONCRETE PIPE FORMS

"STANDARD" The World Over



Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

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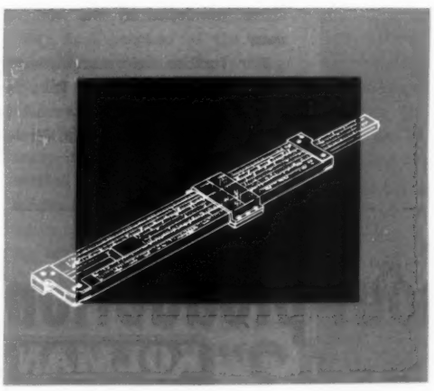
Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA

THE "SPECS" TELL THE STORY



What do "standard equipment" and "rated capacity" of heavy-duty trailers really mean? Since manufacturers' standards may differ, we invite close attention to Dorsey specifications. They bring out two important points:

When we say a trailer is "completely equipped" we mean just that. Each model comes with lights, brakes and other items needed for highway use, and tires are full-sized for capacity loads.

Dimensions of main beams, cross members and other structural members will show any engineer that the rated capacity of any Dorsey model is conservative, providing a big margin of safety.

This means that a "20 ton" Dorsey will carry at least 20 tons with ease, day after day, even over rough terrain.

This means that when operating conditions are not ideal, it's safer to rely on Dorsey hauling equipment.

MODEL HTS LOW BED

20 Ton capacity — *Weighs Only 8,250 pounds* (also available in 15, 25, 30 and 35 ton capacities)

Although as much as a ton lighter than other trailers of comparable capacity, high-tensile steel main channels and close-spaced all-welded cross members give the HTS superior strength and ruggedness. Flat gooseneck provides support for blades and other loads.

TANDEM TILT-TO-LOAD

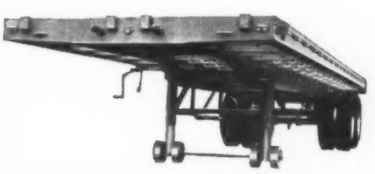
15,000 and 20,000 lb. capacities
Weights: 2,500 and 2,700 lbs.

Speed and efficiency as well as economy are combined in this versatile tilt model: it's so light a dump truck pulls it easily. Two-way hydraulic control is so precisely balanced the weight of a man will tilt it up or down. Single axle models also available.

NEW SELF-LOADING FLOAT

This trailer will actually carry 45,000 pounds *concentrated in 10 feet of its length!* The secret is the extra-deep high-tensile steel main frame that we "tailor" to length and load requirements:

14 inches deep on floats 28 through 31 ft.
16 inches deep for lengths 32 through 35 ft.



THE GIANT PLATFORM

44,000 lb. capacity — *Weight: 8,410 lbs.*

In the year since its introduction, the Giant has become America's No. 1 platform! Although as much as 2,000 lbs. lighter than other platforms, it has even greater strength.

15th ANNIVERSARY DORSEY TRAILERS

For the complete facts on any model heavy-duty trailer, see your Dorsey distributor — or wire collect.

DORSEY TRAILERS / ELBA, ALABAMA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 359

New machine puts down integral curb and gutter

■ A curb and gutter laying machine hailed as a revolutionary idea in the street and road construction field is being manufactured by E. L. Hardin Associates, Inc. The new unit eliminates the need for both forms and hand finishing.

The compact machine moves forward at the rate of 3 fpm, leaving in its wake a single-unit completely finished curb and gutter. With the machine running on an angle-iron track to give perfect alignment, concrete for the curb and gutter is squeezed out like toothpaste from a tube. The hopper of the machine is fed from transit-mix trucks or dump-body conveyors. The Smith-Field automatic curb machine puts down either an asphalt or cement concrete curb and gutter. No hand finishing is required, according to the manufacturer.

The Smith-Field automatic curb machine produces a finished integral curb and gutter without forms.

The integral curb and gutter measures 24 inches at the top and 25½ inches at the bottom. A 1-inch batter is left on the curb side and a ½-inch batter is formed on the gutter side. The curb has a 3-inch double reverse radius and is 6 inches wide at the top.

A cubic yard of cement concrete yields 21 linear net feet of curb and gutter. Expansion joints are cut every 10 feet, and ¾-inch contracting joints are cut every 50 to 70 feet, depending on engineering requirements.

The new machine, powered by a Wisconsin 10-hp motor with reduction gear, is a companion piece to the Stephens-Canfield single curb machine, developed by the same company.

For further information write to E. L. Hardin Associates, Inc., Salisbury, N. C., or use the Request Card that is bound in at page 18. Circle No. 172.

Track-type loader

■ The new International Model 12 Payloader is described in literature from the company. An outstanding feature of this unit is the rear-mounted engine, which seats the operator in front of the engine, and permits him to have an unobstructed view of the 1¾-yard bucket. According to the literature, the power-shift transmission with torque converter has forward speeds to 10 mph and reverse speeds to 13 mph. Complete specifications are included along with the descriptive material.

To obtain the literature write to International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill., or use the Request Card at page 18. Circle No. 42.

JOYCE JACKS
the complete line for every need!

JOYCE JOURNAL JACKS
JOYCE BALL BEARING SCREW JACKS
JOYCE SCREW JACKS
JOYCE HYDRAULIC JACKS
JOYCE AIR MOTOR JACKS WITH TOE LIFT
JOYCE AUTOMATIC LOWERING JACKS

Pick any lifting job . . . you'll find there's a Joyce Jack that will fill the bill! For Joyce builds a complete line of ratchet, screw, hydraulic, air operated jacks, trench braces and material lifting equipment . . . to meet every lifting application. And you can depend on Joyce Jacks too . . . for Joyce top-quality products have been the by-word for lifting equipment since 1873!

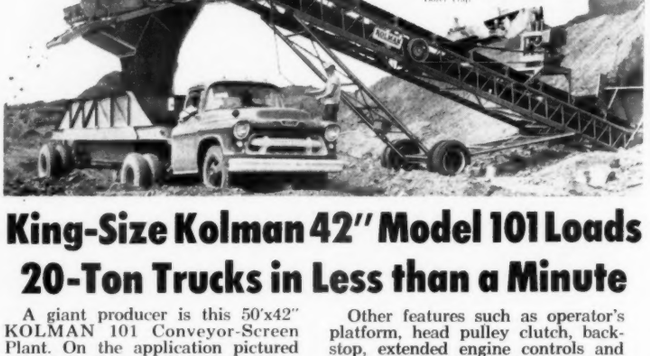
. . . write for complete information today!

IN CANADA: Midland Foundry & Machine Co., Ltd., Midland, Ontario

JOYCE
THE JOYCE-CRIDLAND CO.
DAYTON 3, OHIO

For more facts, circle No. 360

talk about production!



King-Size Kolman 42" Model 101 Loads 20-Ton Trucks in Less than a Minute

A giant producer is this 50'x42" KOLMAN 101 Conveyor-Screen Plant. On the application pictured it loaded 20-ton trucks in less than a minute while scalping out a large proportion of oversize rock in the production of sub-base material.

From three to four crawler tractors with dozer blades were kept busy in the pit feeding this hungry monster. It is equipped with dozer trap designed to facilitate dozer feeding. A complete line of other loading accessories is also available, including the feeder-trap combination, open type hopper and attached feeder, all fully portable.

The KOLMAN single-deck vibrating screen used on this plant is 9' long by 54" wide. Its design eliminates excess weight, making it possible to suspend this screening surface of over 40 square feet on the portable conveyor without extra supports. This plant can also be equipped with a double or triple-deck screen to produce various sizes of material in one operation, ideal for the simultaneous loading and screening of sand, gravel, ore, crushed rock, coal, limestone and similar materials. Spray bars can be added to provide an efficient, low cost portable washing plant.

Other features such as operator's platform, head pulley clutch, backstop, extended engine controls and rugged design of the entirely portable plant make it the most complete and practical unit of its kind now available. These outstanding features are also available on smaller Model 101 KOLMAN plants of the same design.

Single-deck vibrating screen folds under end of conveyor for transporting. No disassembly of the driving mechanism is required.

SEND for FREE literature

KOLMAN Manufacturing Co.
4922 W. 12th St., Sioux Falls, S. D.
Please send literature on—
☐ 101 Heavy Duty Conveyor
☐ 202 Junior Conveyor
☐ Screens ☐ Feeders ☐ Traps
Quote — size or — capacity
Name .....
Address .....
City .....

For more facts, use coupon, or Reader-Reply Card opposite page 18 and circle No. 361

BETTER FINISHING in 1/2 the time!

no blade changing to float and trowel!

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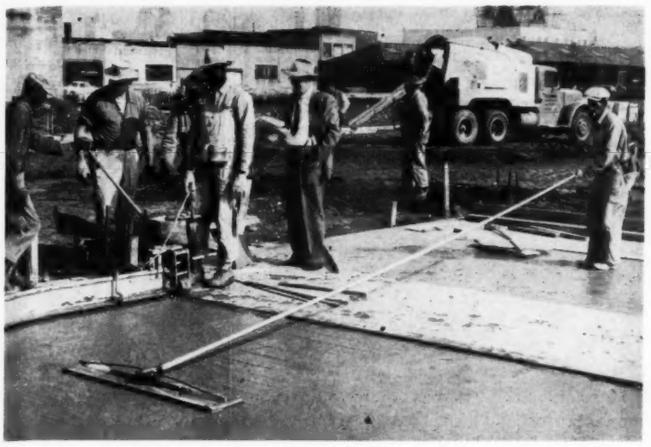

By a twist of the handle the tilt of the Cam-Tilt longitudinal float can be altered to any desired pitch.

Army engineers officer receives safety citation

Col. Morton Solomon, district engineer of the Eastern Ocean District, U. S. Army Corps of Engineers, has received a special commendation from the National Safety Council for his vigorous and sustained safety program at Goose Bay, Labrador.

A similar commendation was also made by the Associated General Contractors of America, Inc.

Air-cooled engines

■ Deutz air-cooled diesel engines, operating on from 1 to 12 cylinders, are fully described in a catalog from the importer, Diesel Energy Corp. The engines can operate within a temperature range of minus 40 degrees to plus 140 degrees F. Each part of the engines are detailed, and scale drawings of each of the seven models give the dimensions. Standard equipment, performance data, and action shots are included.

To obtain the catalog write to Diesel Energy Corp., 82 Beaver St., New York 5, N. Y., or use the Request Card at page 18. Circle No. 75.

Bruning to handle Kodak copying units

The Charles Bruning Co., Inc., Chicago, Ill., has been appointed a dealer of Verifax copying machines and materials made by the Eastman Kodak Co., Rochester, N. Y. The Verifax line will complement the diazotype Copyflex machines now made by Bruning.

Twist of handle adjusts longitudinal float tilt

■ A new type bull float is available from the Creative Metals Corp. as an addition to its line of concrete-placing and finishing equipment.

The new float is called the Cam-Tilt bull float because of the cam located in the strongback. By twisting the handle, the tilt of the float can be altered to any desired pitch.

The handle is made of heat-treated aluminum tubing which telescopes, one section within another, to give any length from 12 to 22 feet. Floats of steel or wood, either in 4 or 5-foot lengths, are available.

For further information write to the Creative Metals Corp., 1290 Powell St., Emeryville, Calif., or use the Request Card at page 18. Circle No. 4.

New Detroit Diesel head

Clyde W. Truxell, former works manager of the Detroit Diesel Engine Division of General Motors Corp., Detroit, Mich., was named general manager of the division last month.

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Model CFH-6 CONCRETE FLOOR HOPPER speeds up ground or top-story pours, keeps truck or stationary mixers moving full capacity.

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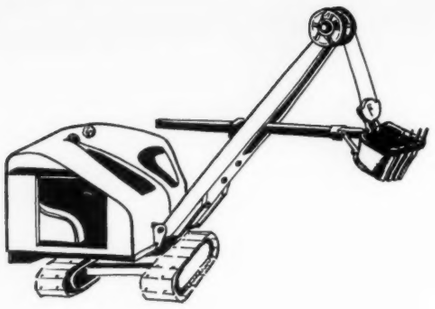

Pit operation

(Continued from last month)

Pits may be opened casually by digging in a roadside bank, or large sums may be spent on investigations, plans, road building, and site preparation, before work is started. Most pit operators start with small equipment and output and increase in scale if they prosper.

If a contractor can dig in his own land, or on a fixed-price-per-yard basis elsewhere, and no access road is required, no investigation of the deposit may be necessary.

On the other hand, if a large-scale operation is planned involving plant and other equipment bought specially, the building of haul roads, and clearing and stripping, or if the deposit is of such value that every yard must be removed, the formation should be carefully investigated for extent, quality, accessibility, and water conditions. An option to buy or to develop should be secured before this investigation.

The only certain way of finding exactly what is underground is to dig it out. However, test boring or digging, mapping of surface indications, study of other pits in the same formation, consultation with geologists, and talks with local old timers may give an adequate picture of conditions.

Test boring includes making shallow holes with a hand auger, and sinking deep holes with auger, well-drill, or core-drill equipment. Augers generally give an accurate picture of formations they can penetrate, except that they may mix spoil from adjoining layers to a confusing extent.

Well drills pound everything they meet to sand or chips, and because of the churning action of the water, will erode loose formations around the hole, and mix their debris with that produced by the bit. Considerable skill is required to interpret these wash borings, and results are sometimes uncertain.

Wash borings may also be made by diamond drills, using a solid instead of a coring bit. The hole is usually smaller and can be sunk faster, but the same criticisms apply.

Core drills will not always pick up loose material satisfactorily, but will produce excellent and reliable samples of rock.

If the soil does not cave, deep shafts can be dug by a clamshell of sufficient bucket weight. Information should be obtained from the spoil, or by the use of mirrors in the shaft, as the possibility of collapse makes it unsafe to go down to take a look unless heavy shoring is installed.

Any hole or shaft should eventually indicate the water level. In porous soils this takes a few minutes, in tight ones as much as a month. If a record of the seasonal rise and fall of the water is to be kept, the hole should be lined with perforated casing, unless it is in rock.

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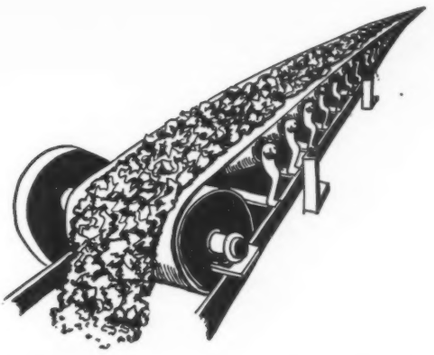
This is the seventeenth and last in a series of articles consisting of excerpts from the 1,280-page book, "Moving the Earth," by Herbert L. Nichols, Jr., published in March of last year. Priced at $15, the book is available through the Book Order Department of CONTRACTORS AND ENGINEERS, 470 Fourth Ave., New York 16, N. Y. A copy may be ordered on approval by circling No. 1 on the Request Card at page 18. Approval copies will be billed at $15 plus postage.



Hill pits may be opened by a straight cut in or by benching. After reduction to the level of the surrounding land they are dug as sunken pits.

Subsurface workings, called sunken or dig-down pits, may be opened with shovels and ramps, or by dragline or hoe work from the top, in the same manner as a haul-away cellar excavation.

Draglines can take gentle slopes in a series of benches. It is necessary to level a strip for walking, as accurate loading with a dragline is difficult if it is on a slant.

A permanent or semipermanent plant should be as close to the digging as it can without being in danger from blasting and slides. If the pit is wide, or includes many sections, the plant should be near the center, or the side which produces the greatest yardage.

Dig-down pits may supply the plant by means of ramps and trucks, trucks with cable assists, vertical bucket conveyors, clamshells, or elevators. If supply is vertical, the plant should be located on the pit edge, or as near to it as firm footing can be found. This method is ordinarily used in rock pits, but not all rock will support a factory on the edge of a cliff.

If the spoil is trucked up, it is best to locate the plant well back from the pit to allow for ramps, storage, and room for expansion.

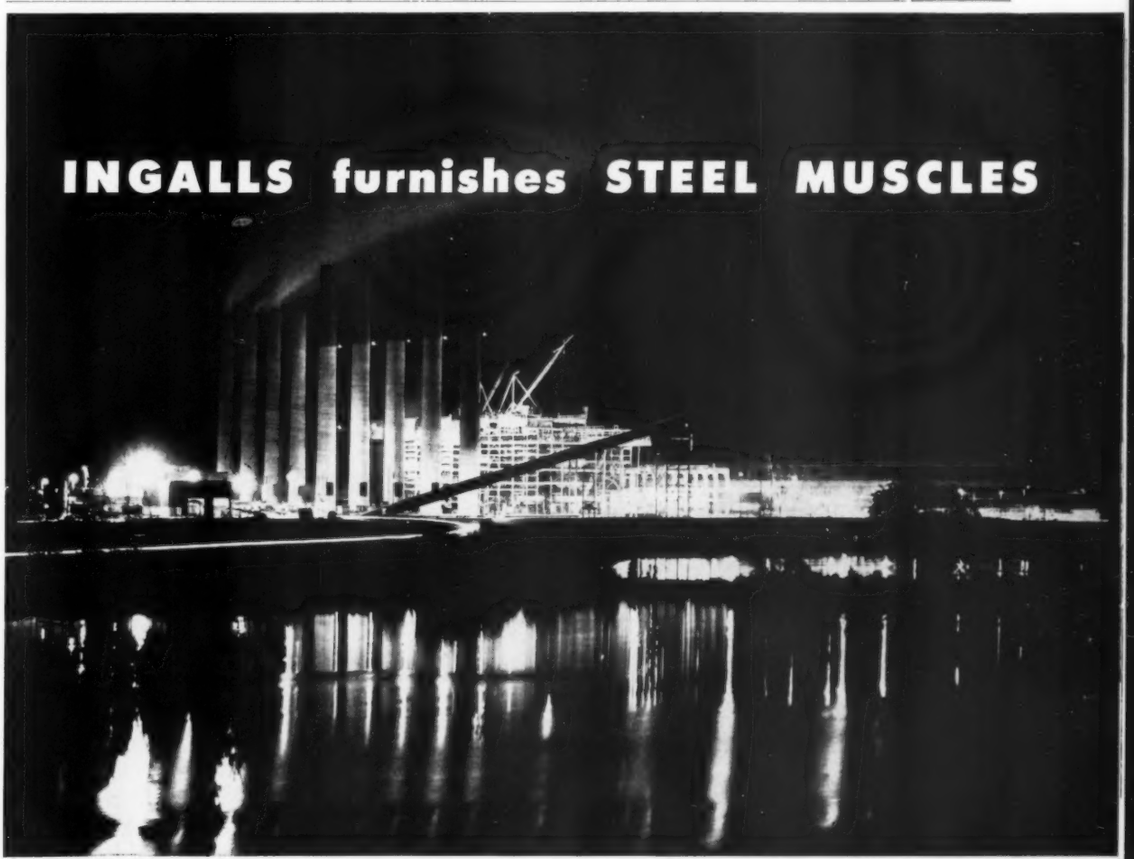
Processing plants

This heading includes screens, crushers, and washers with their feeding and discharge mechanisms.

The simplest screening equipment is that described earlier in connection with topsoil. These pickup or skid grizzlies can be used wherever a shovel can work, but require ramps if they are to be used with tractor loaders. Their product is not well graded, as narrow oversize pieces pass through readily.

Mobile plants having screening, usually crushing, and occasionally washing equipment mounted on one or more wheeled trailers, require from a few minutes to several hours to move up to a bank and start work. Short moves in the pit require less downtime than highway transportation as conveyors and other projecting parts need not be removed or folded in.

One of these units is usually able to eliminate primary hauling or to reduce it to a single truck shuttle, or a short conveyor. For direct loading from a low bank, particularly by a short-range excavator, it may be de-



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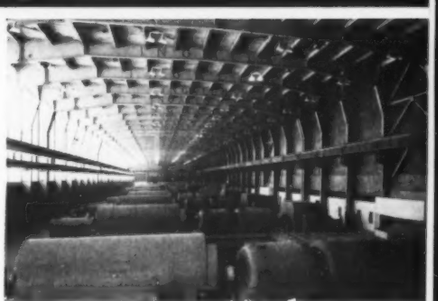
This is the world's largest steam-electric plant, recently completed near Kingston, Tennessee, by the Tennessee Valley Authority. The entire plant has a capability of one million, six hundred thousand kilowatts — about fourteen times that of Norris Dam. With a generator room 895 by 115 feet, a boiler room 868 by 138 feet, and a shop and office area 200 by 205 feet, the main building of the nine unit structure is by itself tremendous; some idea of the whole plant's scope may be realized by considering the twenty two million man hours that went into planning, designing, construction, and secondary services.



View of turbine room in Ingalls-fabricated powerhouse; 7 units in operation; 150,000 kw units in foreground

INGALLS, specialist in steel for power plants, is genuinely proud of having been called upon to fabricate the structural steel used in the powerhouse proper for this monumental operation. It represents one more in a large series of power installations done by Ingalls in twenty two different states, throughout the North, South, East, and Southwest. Wide and intense practical knowledge makes Ingalls ready *now* to help you with both speed and true economy. Your inquiries will be promptly acknowledged.

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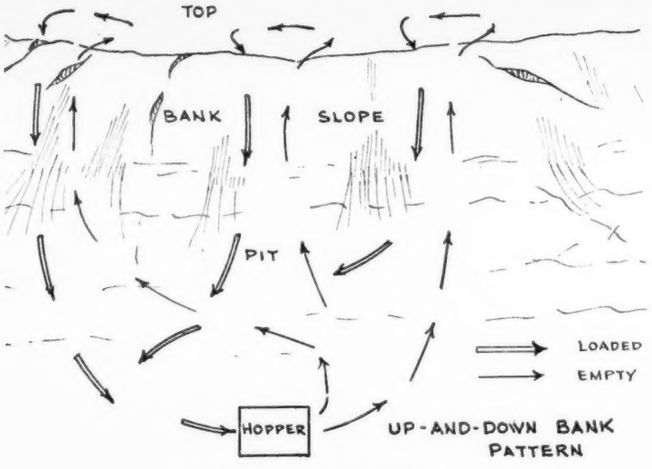

Loading from bank with scrapers

(*Continued from preceding page*)

sirable to keep a tractor constantly on hand to move it up.

The use of portable units allows almost as much flexibility as in direct-from-the-bank selling. However, highway requirements keep their maximum size and weight below that required for many jobs; and the necessity of packing everything neatly in minimum space causes them to be harder to service than fixed plants of the same capacity.

They can often be used profitably for handling the more distant banks, or for filling special orders, in a pit that has a fixed plant. They may also be used for outside jobs or subsidiary pits. Hauling is a major cost factor in gravel and crushed rock, and the ability to open and process banks near the job may be valuable.

A mobile screener and crusher will reduce the risk involved in opening a new pit. Although not very readily disposed of, they are more or less standardized, and if found to be of the wrong size and type, can be sold or turned in, with a far smaller loss than a fixed plant.

Also, the use of one or more of these units may permit the pit to be developed until adequate space is dug for a fixed plant. If the pit is in a hillside, with steadily increasing bank height, getting the permanent plant well back in it will result in cheaper primary hauling over the whole job.

Fixed plants

A fixed plant should be the right type for the material to be processed: it must be large enough for the job and within the capital budget. The first consideration is generally the most important, for if business is good, the plant can be expanded although at relatively higher cost; and exceeding a budget may be less damaging than getting the wrong equipment.

Plant manufacturers are ready to supply good engineering advice on every aspect of plant layout. It is a sound plan to get at least general recommendations from two or more companies, and to compare their findings with local practice. Even with these precautions, no person without a good working knowledge of the business should make a heavy investment in machinery from catalogs.

Wherever a fixed plant is placed, the cost of hauling to it will increase as the digging progresses, whether laterally, downward, or both.

Taking down, moving, and setting up a permanent plant is usually a tedious and expensive job, particularly if it is a large size. Even if it is of prefabricated, knockdown construction, rust, wear, and patching may make it hard to handle and foundations are generally left behind. Many millwrights consider it best to salvage only the operating units, and to order or build new frames to carry them.

It is usually sound policy to charge the entire cost of such a plant against the material that can be handled at its original location. If the pit area is definitely limited by property boundaries, zoning restrictions, or change of ground, and the depth of the deposit is known, the yardage can be calculated. It is best to make a liberal allowance for occurrence of unexpected masses of unusable material.

Hauling

Pit hauling includes the movement of material from the bank to the plant or to storage, and between the plant and storage in both directions It also involves delivery from these three locations to the job, although a variable amount of the product may be hauled from the pit in the customers' trucks.

The principal hauling units for pit use are trucks, including semi and

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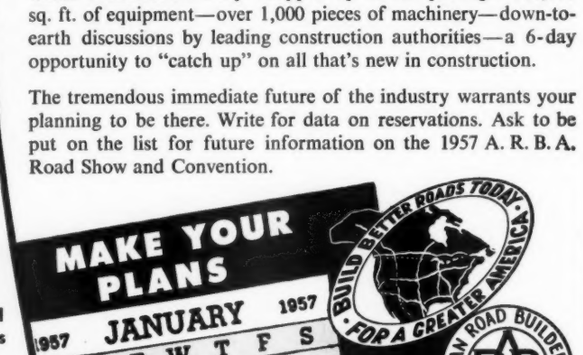

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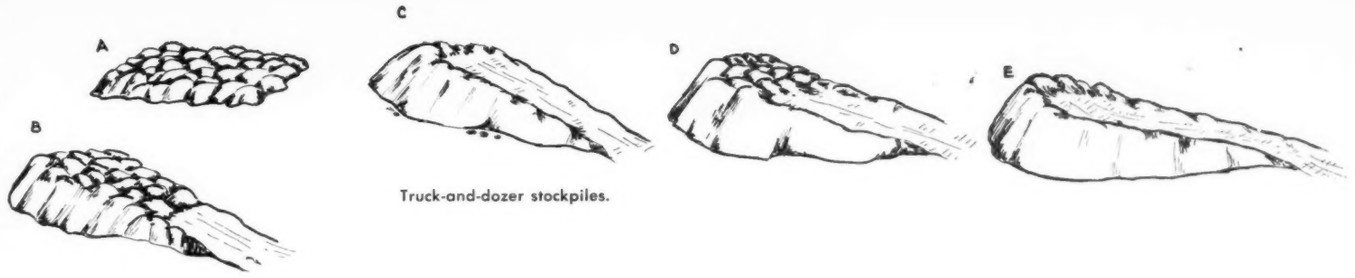


Truck-and-dozer stockpiles.

full trailers, and conveyor belts. Railroad freight trains, of either narrow or full gage, are used in big pits, the latter particularly in taking raw material from banks to a distant market. Digging units such as scrapers and cable excavators may also do a substantial amount of hauling.

Conveyor belts, cable excavators, and to a smaller extent, scrapers are largely confined to work inside pits. Trucks are equally adapted to inside hauling and outside delivery. On very long hauls, heavy materials are more economically moved by standard-gage rail.

Conveyor belts may be considered either hauling units or part of the plant itself. They move and elevate material with minimum effort, but are usually difficult to set up and to relocate. They may be used instead of haul roads and trucks for delivery of a heavy volume of material to a single point many miles away.

Trucks are excellent flexible, general-purpose units. They are available in a wide range of standard sizes and can be adapted to different size loaders or production schedules by varying the number on the run.

Cable excavators require a large yardage within reach to justify setting up. They can also be used in storage yards to pile, reclaim, and feed.

Scrapers, to operate as such, need ground they can dig and hoppers which they can drive across, or storage areas giving them room to maneuver. Banks which they cannot dig can be loaded into them. However, scrapers are more costly and are usually slower than dump trucks of the same size, so it is not good practice to use them steadily under shovels.

A scraper can dump beside a sunken hopper which is kept filled by a dozer.

Truck hauls may be kept short by adding conveyor belts to the plant. The new belt will dump on the receiving end of the previous belt. Such installations may be quite long and are justified whenever considerable yardage will be handled.

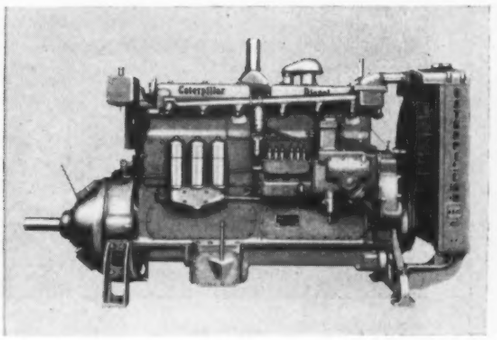
Hoppers which are built so that the truck can drive straight across, instead of backing to dump, are more expensive to construct but will allow a faster truck cycle. Such hoppers can also be used for scrapers.

Stockpiling

Stockpiling is most efficiently done on hard, flat, clear areas. Dumping

(Continued on next page)

DEPENDABLE CATERPILLAR POWER HELPS CHANGE NIAGARA'S COURSE



Caterpillar-powered equipment is helping slow Niagara's famous Bridal Veil Falls to a temporary trickle. This CAT*-powered Koehring crane is swinging two men with sandbags to build a diversion dam in the Niagara River. Walter S. Johnson Building Co., Inc., of Niagara Falls, N. Y., is building a total of three dams. The objective is to direct the river flow away from two islands, which are badly water-eroded, so that overhanging precipices can be cut away.

"We've been in business 33 years," says Jack B. Johnson, vice president, "and when we discovered Cat quality, we stayed Caterpillar owners. They're dependable, durable machines." The Johnson company is 100% Caterpillar equipped. They have a D315 in another Koehring plus four Caterpillar track-type Tractors, in addition to the D13000 in this rig.

The D13000's reputation as a tough, long-wearing engine is now being carried on by its new modern version, the D342, which develops even more horsepower from the same size engine. The D342 is only one of the new models in the Caterpillar line of modern Diesel Engines, now available with maximum output capacities up to 650 HP.

All these new power plants share the advantages of Caterpillar's sturdy four-cycle construction. There's no need to clean air boxes or cylinder ports, or to tinker with fuel injection adjustments. These dependable yellow engines have such long-life features as "Hi-Electro" hardened crankshafts, special aluminum alloy bearings, and highly effective oil, air and fuel filters.

Your Caterpillar Dealer will tell you about the Caterpillar Engine that can do most work at lowest cost for longest time on *your* job. See him when it's time to repower—and specify Caterpillar power when you order new excavating equipment from a leading manufacturer.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

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MODERN HEAVY-DUTY POWER

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(Continued from preceding page)

may be done on the flat, off piles, or from side banks. The location should be convenient to the face, the plant, and the market, the relative importance varying with the use of the material.

If available space is very large compared with the bulk to be stored, trucks may dump piles against each other, as closely as possible, without further grading or heaping. Large trucks make high piles and place maximum yardage in an area.

This method takes a lot of space. forms a bank too low for efficient loading by many machines, and causes maximum danger of mixing the stored material with the floor.

If packing by trucks will not cause damage, such a piled area may be smoothed off by a dozer, and one or more additional layers added. Factors limiting the maximum height are the slope in from the edges and the more gradual grade for the truck ramp, which steadily cuts in on the area available at the bottom.

If the material is somewhat too soft or loose to support trucks, the road may be strengthened by the use of wire mats, or small quantities of screenings or other binders, if their use will not spoil the value of the stockpile.

Very loose material such as sand or round gravel should be stacked by a drag scraper, bulldozer, or clamshell.

Stockpiles may also be built by dumping off a bank.

Dozers are necessary to the truck-piling methods described. They can also be used to make heaps of dumped material.

If enough trucks are running to keep it busy, the dozer may push each pile up as it is dumped. The volume the dozer can handle decreases as the height of the pile increases.

The dozer heaps up stockpiles rapidly, is entirely flexible in placing them, or varying their size or shape, and can be used for a variety of other work. However, it must move its entire weight up the pile with each load, has constantly working tracks which may be subject to severe wear in sand or other abrasive piles, and may pack or crush soft materials so as to reduce their value.

The four-wheel-drive, rubber-tire dozer does not exert as much push, particularly if the footing is loose, but does minimum crushing damage. Tire wear is slow in sand but may be rapid in crushed rock. Packing is more severe.

Shovel dozers can heap piles, and can also separate, carry, and load. Wheel types are frequently used to reclaim to hoppers.

The clamshell is commonly used for building stockpiles from shallow dumps, barges, and cars. A light rehandling bucket, with toothless lips, is used for loose material on a floor.

It can be used at the same time for loading trucks from either the dump or the stockpile. It often alternates hopper loading from the stockpile with the heaping work.

It is flexible in regard to placement and shape of piles, although not as much so as the dozer. It does not crush or pack.

If the storage location is fairly permanent, it may be more economical to heap up the truck dump with a drag scraper than with the trucks and bulldozer. The mast should be high enough to allow for piling the maximum amount to be stored, and the tail tower should be readily moved so that a wide area can be utilized.

The drag scraper may also be fixed to reclaim the material with a reversed bucket, and dump it into a hopper from which it is conveyed into the plant, dump bins, or directly into trucks.

If several classes of material are to be handled, both head and tail towers may be mobile.

A scraper installation does not have the flexibility of dozers and is not available for other work. However, it is very efficient in that only the weight of the bucket needs to be pulled up with the load; it does not pack or crush the pile, and only the bucket is subject to abrasive wear.

Carrying scraper

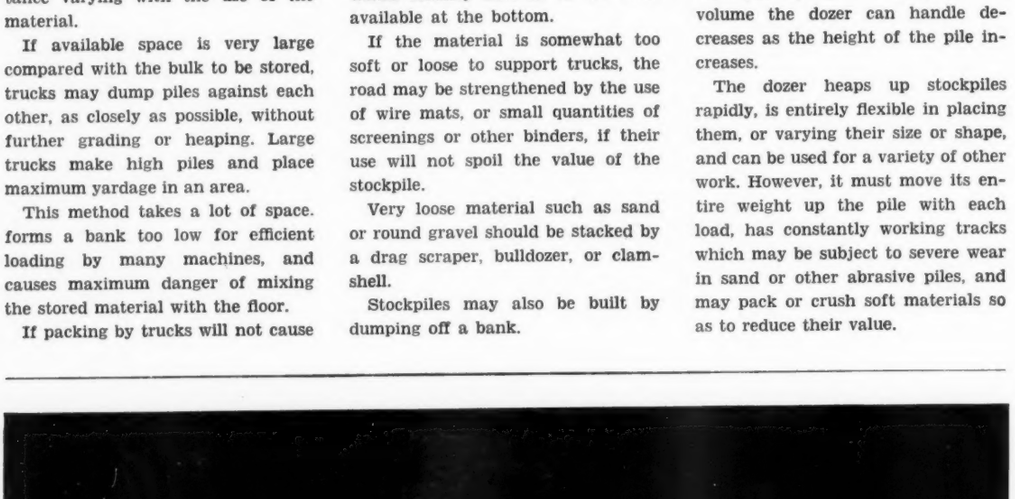
The rear-dump scraper builds a pile in about the same manner as a truck. It can operate on a steeper ramp and in much tighter places, particularly if towed by a crawler.

The bottom-dump scraper is most efficient at building a long pile, in the same manner as a highway fill. The sides are built up, starting at the outer edges, as steeply as the material will permit. The entrance ramp at one end and the exit at the other are started at gentle slopes and steepened as necessary. The pile may be started full length, or made short, and extended when additional capacity or an easier ramp grade is needed.

A dozer or a motor grader should be available for at least occasional trimming of the surface. If the material tends to get soggy when water soaked, or is unstable at the edges, compaction with sheepsfoot or rubber-tire rollers might be advisable. Ordinarily, however, the scrapers themselves provide sufficient compaction for stockpiling purposes.

Scrapers may also make shallow piles for rehandling by drag scrapers.

Stackers and other conveyors of the boom type will build high piles



For Safety at Highway Danger Spots Use Bethlehem Beam Guard Rail

Used at sharp turns, embankments and bridge approaches, Bethlehem Beam Guard Rail forms an effective and dependable service for today's high-speed traffic. At these danger spots, Bethlehem Beam Guard Rail has the strength to withstand considerable shock from a colliding vehicle, yet enough flexibility to re-direct the vehicle parallel to the rail.

Used as a highway divider, Bethlehem Beam Guard Rail helps to reduce accidents in respect to opposing streams of traffic.

Bethlehem Beam Guard Rail is made from 10- and 12-gage steel, bolted with a 12½-in. overlap to make one continuous, impact-absorbing beam. It's easy to install and requires no anchor rods, special tools or complicated adjustments. Details and dimensions are illustrated here.

The nearest Bethlehem sales office will be glad to supply complete information on Bethlehem Beam Guard Rail.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL

For more facts, use Reader-Reply Card opposite page 18 and circle No. 371

with material dumped into a hopper. If these machines are wheel or track-mounted, they can be towed away from the pile so that it will build into a windrow. Width of pile can be increased or separate piles made by pivoting the boom or the whole machine.

These are most easily fed by a drag scraper or revolving shovel, but a skid-mounted ramp that will allow trucks to dump into the hopper can be made out of heavy timber.

Long conveyors, of either the elevating or horizontal type, may be made so that a dumping device can be inserted at any spot desired. This makes possible the building of a windrow the full length of the conveyor, or making a series of separate piles of different grades. Lengthening the dump conveyor will increase the area which can be used. THE END

New firm to manufacture mobile hauling equipment

A new company, Specialized Trailers, Inc., North Hollywood, Calif., has begun producing mobile hauling equipment. The firm, staffed with engineers and designers with many years' experience, will manufacture to customers' specifications as well as produce custom designs to suit individual requirements.

Located at 7400 Laurel Canyon Blvd., North Hollywood, the firm is a division of Fabricated Steel Service, Inc.

Rear-dump truck

■ The Euclid R-15 off-highway rear-dump truck is described in a catalog. According to the specification table, the rated payload of the unit is 15 tons with standard 14.00 × 24 tires, and 18 tons with the optional 16.00 × 25 tires. Major design and operating features are illustrated and described. Performance data and general specifications are included.

To obtain Form No. 119 write to the Euclid Division, General Motors Corp., 1361 Chardon Road, Cleveland 17, Ohio, or use the Request Card at page 18. Circle No. 168.

Gradall transfers two

The Gradall Division of The Warner & Swasey Co., Cleveland, Ohio, has transferred two sales personnel, John Kubik and E. J. Sehl. Formerly in the Houston, Texas, area, Kubik will now operate out of Des Moines, Iowa, working with distributors in Iowa, Nebraska, North and South Dakota, and Manitoba, Canada.

Sehl has been assigned to the East Orange territory where he will work under J. K. Moran, the district manager of the Needham, Mass., office.

District manager of Chain Belt moves

Harold Lavin, eastern district manager for the construction machinery division of Chain Belt Co., Milwaukee, Wis., has moved his headquarters to Ridgeway Center Building, 26 Sixth St., Stamford, Conn. His office is located in room No. 252.

Two new HRB bulletins

Reports on bituminous resurfacing and on soil testing, given at the 34th annual meeting of the Highway Research Board, have been published as HRB bulletins 122 and 123.

Bulletin 122, "Soil-Testing Methods: Moisture, Density, Classification, Soil-Cement," contains four papers reporting on studies conducted recently. Illustrated with photographs, the booklet is priced at $.90.

"Bituminous Resurfacing," Bulletin 123, presents discussions of the problem of restoration of inadequate or deteriorated highways. It is priced at $.75.

The booklets are available from the Highway Research Board, 2101 Constitution Ave., Washington 25, D. C.

LEADING PENNA. CONTRACTOR TELLS HOW

FITCHBURG CHIPPERS SAVE TIME and LABOR

Fitchburg Chipper owned by F. A. Canuso & Sons at work on Roosevelt Blvd., Phila., where Canuso contracted to remove 2500 large trees from 6-mile stretch.

Francis A. Canuso, Jr., of F. A. Canuso & Sons, Inc., Phila., Penna., says: "We do heavy construction work such as highways, bridges, sewage disposal plants, airports, and the like. With our Fitchburg Chipper, it takes only 40 minutes to fill one of our 8 x 9½ closed body converted dump trucks, and one load of chips takes all the brush that we formerly filled four or more trucks with. Our Fitchburg Chipper has been inexpensive to maintain and trouble free in operation and has meant a great saving to us in time and labor."

FREE PORTFOLIO

Complete cutaway, drawings of Fitchburg Chipper in action, specifications, diagram, letters from leading cities — companies. Write on your letterhead. Dept. CE-86.

FITCHBURG ENGINEERING CORPORATION FITCHBURG MASS.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 372

This H-3 Hydrocrane demonstrates its versatility by erecting steel, excavating for and setting sewer pipe and septic tanks and pouring concrete . . . all on the same job in the same day.

Hydrocrane's Working Boom Hoist Speeds Building Erection

With the Hydrocrane, *any* boom angle is a working position because the boom is raised or lowered dozens of times a day as part of the crane's regular operating cycle. Even with full load suspended you can raise or lower boom, *and* swing or telescope *at the same time*, with the precise control that only the Hydrocrane offers. It's just one of the many unique time-saving features that make the Bucyrus-Erie Hydrocrane the ideal builder's tool.

You also gain many advantages working in confined areas. The Hydrocrane's working boom hoist, together with the line hoist, lifts the load over stockpiled materials; under wires, branches or beams as it swings to the spot . . . and places it in the precise position. Hydrocrane's rugged outriggers, which permit conventional motor truck mounting, give you the unusual combination of high capacity and top mobility. Extremely short tail swing (about 4½ feet) lets you put the crane in the tightest spots.

Start now to move those erection and material handling costs to the profit side of your books. Arrange for a demonstration of either the 9-ton H-5 Hydrocrane or the 5-ton H-3 with your Bucyrus-Erie distributor. 154H56

BUCYRUS ERIE SOUTH MILWAUKEE, WISCONSIN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 373

Do You Need A Cab for Your Crawler Tractor

ASK FOR

INDUSTRIAL
All-Weather Cabs

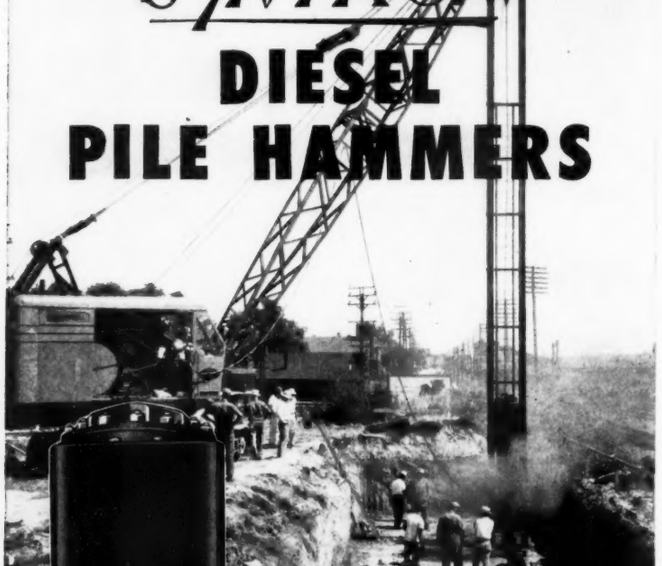
Fully-Enclosed with Swing Doors or Sliding Doors • Semi-Enclosed or Canopy Type
• *Easily Installed* • *Easily Removed*
Ready Made for Your Make and Model Tractor
CONTACT YOUR EQUIPMENT DISTRIBUTOR

INDUSTRIAL CAB COMPANY
36 Jefferson Avenue PHONE 3959 Salem, Mass.

For more facts use Reader-Reply Card opposite page 18 and circle No. 374

SYNTRON

DIESEL PILE HAMMERS



Tested and proven in the field of operation

The Improved Diesel Pile Hammer is an example of the tremendous step forward Syntron has made in self-contained equipment.

Syntron self-contained Diesel Pile Hammer provides the advantages of driving power without the use of boilers or compressors—easily attached to swinging leads of diesel cranes, quickly converts crane to mobile pile driving rig.

The Improved Syntron Diesel Pile Hammers are ruggedly constructed for driving concrete, steel or wood piling.

Three models available with capacities of 5,000, 12,000 and 20,000 foot-pounds per blow.

Write for Catalog data—Free

Equipment of proven dependable quality

SYNTRON COMPANY
227 Lexington Ave. Homer City, Pa.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 375

EQUIPMENT COSTS on the construction of this 500,000-square-foot cotton-storage warehouse in Memphis, Tenn., were cut drastically when the Russell Ozanne Construction Co., Memphis, organized work around two TerraTrac M-3 crawler-mounted fork-lifts. Here one of the rigs sets a 15-foot wood column and supports a workman guiding the column into place. The fork-lifts, which have 21-foot masts, also were used to handle building materials, including concrete. For details on the M-3 write to the **American Tractor Corp.**, 800 Fort Wayne St., Churubusco, Ind., or use the Request Card at page 18. Circle No. 177.

Removable trencher teeth described in bulletin

■ A new set of 60 points in 30 minutes is possible with the use of Esco trencher teeth, according to a bulletin from Electric Steel Foundry Co. The teeth can be knocked on or off by a direct blow at the base by a ball-peen hammer. The bulletin also points out that Esco teeth will fit other bases.

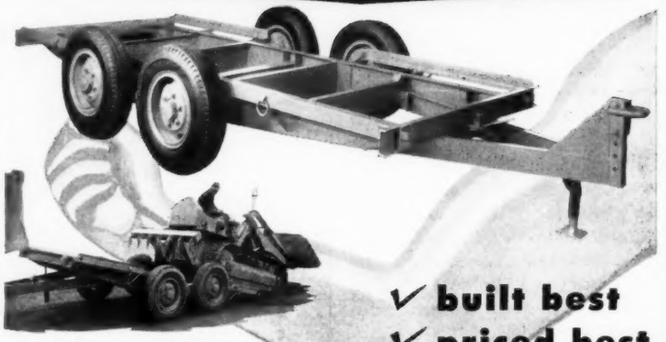
To obtain Bulletin 210 write to Electric Steel Foundry Co., 2141 N. W. 25th Ave., Portland 10, Oreg., or use the Request Card at page 18. Circle No. 78.

Representative named by FMC Florida Division

James E. Poythress is a new representative for Form-Crete all-steel prestressed concrete forms made by the Florida Division of Food Machinery & Chemical Corp., Lakeland, Fla., the Florida Division of FMC of San Jose, Calif. He will make his headquarters at 901 Fifer Driver, Alexandria, Va., and serve customers in this southeast area.

Active in the construction and engineering fields for a long time, Poythress has seen 25 years' service with the federal government and three years service with consultant and design firms.

you get *MORE MILES* per *DOLLAR*— when you buy a MILLER *Tilt-Top!*



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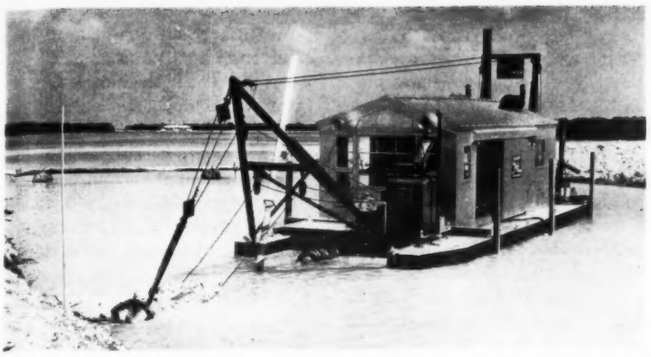
Miller BT 10 ton Tandem Axle Illustrated Above

Time after time, contractors, highway depts. and other MILLER Tilt-Top owners tell us they've put 50,000 miles (and more) of tough usuage on their Tilt-Tops *without a single repair!* Such trouble free performance is no accident,—it begins with engineering for overloads in every member—rigid inspection of each electric weld, use of long life, precision, Timken roller bearings on axles and walking beam shafts, carefully selected, two-inch oak decking, and *first line* tires. Best of all . . . you pay no premium for quality . . . even on first cost! See your MILLER distributor today—and compare!

See your MILLER distributor or write for FREE literature to:

Miller Tilt-Top Trailer Co.
456 S. 92nd Street, Milwaukee 14, Wis.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 376



Land for an exclusive 500-acre housing project near Marathon, Fla., is built up by an Ellicott 10-inch Dragon dredge. Here it deepens a channel, pumping solids 1,000 feet.

Dredging job being done in half the usual time

Approximately 300 cubic yards of land from the bottom of waters off the Florida Keys is being pumped into place hourly for a new 500-acre housing project located near Marathon, Fla.

This job, by F. P. Sadowski Corp., Marathon, uses a standard Ellicott 10-inch Dragon dredge to pump the solids through 1,000 feet of pipe to the discharge point. A Series 71 Twin-Six diesel drives the 10-inch centrifugal pump, and a two-cylinder Detroit Diesel operates the cutter and hauling winches.

Powered by two Detroit Diesel engines, the dredge is working round-the-clock, taking only five months to do what would usually be a full year's work.

Hydraulic Press effects merger with Koehring Co.

Stockholders of both companies have approved a merger of the Hydraulic Press Mfg. Co., Mount Gilead, Ohio, with the Koehring Co., Milwaukee, Wis. Hydraulic Press, manufacturer of metal working presses, plastic injection molding, and die-casting machines, will operate as a subsidiary of Koehring. There will be no changes in the management of Hydraulic Press.

The merger will permit Koehring to diversify its markets while still meeting demands for construction machinery.

Hyster plant to open in Scotland

A tractor equipment assembly plant will be opened on the Clyde River near Glasgow, Scotland, this fall. The new plant, designed to meet demands for Hyster equipment overseas, will supplement the Hyster manufacturing facility operating in Nijmegen, The Netherlands.

Donald Allen, a foreman at the Portland, Oreg., home plant, will be factory manager of the new facility, while Frank Barnabee, assistant purchasing agent from the Peoria plant, will be office manager and purchasing agent.

This is the third recent expansion made by the company. Hyster is planning a new industrial truck plant in Danville, Ill., and a 25,000-square-foot addition is scheduled to be made at the Peoria plant, which produces tractor equipment and cranes.

New Calaveras Co. plant

Calaveras Cement Co., San Francisco, Calif., has opened a bulk cement transfer plant in San Leandro to supply the material to San Francisco and East Bay contractors. The $100,000 installation, equipped to handle four varieties of bulk cement, has a 5,000-barrel capacity.

Stone and Granular Materials

SINGLE-COURSE COMPACTION

18% Faster to Required Densities

VIBRO-TAMPER

Improved shoe design with greater vibrating energy gives you even faster single-course compaction . . . and one machine handles the widest variety of sub-base materials you are likely to encounter.

Use Vibro-Tamper in '56 for new profits . . . by eliminating multiple lift work and the high cost of backtracking, stockpiling and rehandling materials.

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For more facts, use Reader-Reply Card opposite page 18 and circle No. 378

tricky excavation

...IN TIGHT QUARTERS

Another job for Brunner & Lay Tools

Delicate rock excavation for a 36-in. reservoir waterline called for dependable performance. From reservoir to pumping station, not even a small charge of dynamite was possible. Brunner & Lay men developed a technique to solve this problem, just as they are helping to solve such problems the country over.

Carbide Rok-Bits—cross, chisel, "X"—cutaway types—gauge sizes: 1¼-in. thru 6-in. Bulletin B-1

Pneumatic plug & feathers sets for 1½-in. holes.

1½-inch holes were drilled with Brunner & Lay Rok-Bits. Inserted in these were Brunner & Lay pneumatic plug and feathers. A paving breaker was moved from plug to plug driving them evenly for best breakage. This method worked equally well in both concrete and stone. For details on this and other tricky excavation jobs, phone or write our nearest office. Request Bulletin T-11-3.

Brunner & Lay Products

Brunner & Lay, Inc.
9300 King St.
Franklin Park, Ill.

Brunner & Lay Rock Bit of Philadelphia, Inc.
2514 East Cumberland St.
Philadelphia 25, Pa.

Brunner & Lay of Los Angeles, Inc.
2425 East 37th St.
Los Angeles 58, Calif.

Brunner & Lay, Inc.
150 Leslie St., Dallas, Texas

Brunner & Lay Rock Bit of Asheville, Inc.
Sweaten Creek Rd., Asheville, N.C.

Brunner & Lay of Portland, Inc.
660 N. Tillamook St., Portland 12, Ore.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 379

Super VULCAN Differential Acting Pile Hammers Drive Toughest Piles

Positive action . . . simple design . . . rugged strength. Specialized power for driving the heaviest, longest and most difficult piling.

Bulletin 70-C illustrates all available sizes, including the world's largest 200-C. Specifications and duplicate parts list are included. Write to:

VULCAN IRON WORKS
327 NORTH BELL AVENUE
CHICAGO 12, ILLINOIS

For more facts, use Reader-Reply Card opposite page 18 and circle No. 377

Van Brush firm expands

The Van Brush Mfg. Co., Inc., has taken an additional 3,000 square feet of space adjoining its location at 327 Southwest Blvd., Kansas City, Mo., part of which will be used for manufacturing. The firm, recently purchased by Tom B. Kennedy, makes brushes and brooms for road work.

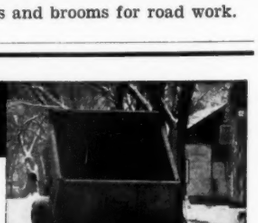
SWENSON SPREADERS
FOR ICE CONTROL

SPREADS SALT 200 LBS. PER MILE
OR IN ANY DESIRED AMOUNT
Lays a Narrow Strip or Full Traffic Lane

Handles all granular materials — salt, cinders, sand, calcium chloride, rock chips. Spreads at speeds up to 30 M.P.H. Clutch-controlled flow: steady or intermittent for hills and intersections.

Write for complete information

SWENSON SPREADER & MFG. CO.
LINDENWOOD, ILLINOIS



For more facts, circle No. 380

Four-cylinder engines

■ The Jeep 4-cylinder industrial engine and power-unit line is presented in a folder from Willys Motors, Inc. Dimensional drawings of the Models F4 and L4 accompany specifications of the models. Graphs give the rpm engine speed of both models, and tables of speeds versus horsepower and torque are included.

To obtain the folder write to Willys Motors, Inc., 1505 N. Cove Blvd., Toledo, Ohio, or use the Request Card at page 18. Circle No. 56.

Concrete, cement additive

■ Losorb, an additive for moisture-proofing concrete and cement materials, is described in a bulletin from Pennsylvania Industrial Chemical Corp. The additive, a custard-like emulsion, is added in a proportion of 2 to 4 per cent to the mix. A detailed listing of the applications show that Losorb can be used with concrete blocks, mortar, plaster, and stucco.

To obtain the bulletin write to Pennsylvania Industrial Chemical Corp., Clairton, Pa., or use the Request Card at page 18. Circle No. 51.

L. B. Foster news

The L. B. Foster Co., has moved its southwestern headquarters into larger offices in Houston, Texas. The offices are now located in Suite 1119 of the Bank of the Southwest Building, the city's newest skyscraper. With the move to the larger headquarters, the office has taken on Ray Laden as district sales manager for the area.

The firm also plans to transfer warehousing activities from its present 7-acre area in Atlanta, Ga., to an 18-acre site, north of Atlanta. The facility will contain a 16×30-foot office building and a 100×300-foot enclosed storage shed.

Facilities for reconditioning piling and rail and for cutting structural grade pipe are provided at the new plant. Two miles of railroad trackage will also be laid to facilitate shipping.

The new warehouse will serve the Southeastern states.

Caterpillar plans part in 1957 ARBA Road Show

The Caterpillar Tractor Co., Peoria, Ill., has begun preparations for its participation in the 1957 Road Show of the American Road Builders' Association. Lee L. Morgan and R. J. Pitzen, of Caterpillar's sales development and training division, respectively, are general chairmen in charge of planning and coordinating the firm's entry.

Wolfson joins Tishman as consultant

James J. Wolfson, construction consultant and formerly first vice president of M. Shapiro & Son Construction Co., Inc., is now vice president of the Tishman Construction Corp., a subsidiary of Tishman Realty & Construction Co., Inc., New York, N. Y.

Wolfson will serve as general construction adviser on the various Tishman projects. Building construction jobs on which he has worked include the Kleinhans Music Hall in Buffalo, the Juvenile Court House in Washington, and a number of theaters and housing projects throughout the country.

Sun Chemical plans expansion of subsidiary

The Sun Chemical Corp., Long Island City, N. Y., has authorized funds for the construction of a new manufacturing plant for its subsidiary, the A. C. Horn Co., Houston, Texas. To be located on an 18-acre site, the building, measuring 33,500 square feet, will be ready for occupancy in November, 1956.

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Only one thing. Will the labor market keep pace? That's where schools are important. If your company isn't helping community groups to get modern schools, it's not apt to get the skilled people it needs. Self interest, civic spirit, or both, you should make schools your business, too.

PUBLIC SERVICE ADVERTISING COUNCIL

Want to find out how to help in *your* community? Get specific information by writing: Better Schools, 9 East 40th Street, New York, N. Y.

Trap Rock official named to state advisory council

Gerald M. Boyle, vice president in charge of sales and a director of the New York Trap Rock Corp., New York, N. Y., has been appointed to Governor Harriman's Business Advisory Council. The council was formed by the governor to promote the growth of business and industry in New York State.

Boyle, a Trap Rock executive for the past six years, has been associated with the retail construction materials business for 25 years. He is a member of the joint technical committee of the State Department of Public Works and the New York State Crushed Stone Association, and is also a member of the National Research Council and the Associated General Contractors of America.

Turbopowered engine

■ Detroit Diesel's Model 6130T Series 71 turbopowered diesel engine is treated in a bulletin from the company. This 6-cylinder fan-to-flywheel unit has a brake horsepower of 236. A graph shows the continuous and rated brake horsepower and fuel-consumption curve. Scale drawings give the dimensions of the engine. Tables contain the complete specifications and the standard and optional equipment available.

To obtain Form 3SA74 write to the Detroit Diesel Engine Division, General Motors Corp., 13400 W. Outer Drive, Detroit 28, Mich., or use the Request Card at page 18. Circle No. 74.

Pipeline clearing job takes half estimated time

Clearing time on the right-of-way for the 210-mile natural gas pipeline being built for West Coast Transmission Co., Ltd., from Williams Lake to Merritt, British Columbia, is being cut in half by the two crews of Canadian Bechtel, Ltd. Though this was originally considered a two-year job, the Bechtel firm, using two crews working in separate locations, now hopes to get the job finished before freezing weather sets in this year.

Each crew is working with three Traxcavators with fork-lifts, modified by Finning Tractor & Equipment Co., and a Caterpillar D8 and bulldozer. Trees up to 24 inches in diameter are being rooted out with the D8. The lumber which can be salvaged and used commercially is being cut up with chain saws, and the remainder is burned. The Traxcavators are used to pile the useful logs along the right-of-way; and pile logs, brush, and stumps for burning and for cleanup work. In the latter work, the fork-lift is tipped at a 45-degree angle, and the clamp is closed and used as a rake. Men with forks pick up small branches as soon as the Traxcavator completes the raking operation.

The Traxcavators are also helping in the burning operation. The machine works with the fork-lift about four feet off the ground so that the burning pile is lifted about three feet, then the engine is run at the maximum rpm so that air is blown on the fire by the pusher-type fan. In good weather crews complete clearing about a mile of land daily in the rugged country.

Earthmoving unit

■ A folder from the C & D Division of Yuba Mfg. Co. compares the working features of the company's Movall with end-dump trucks. The topics, presented in outline form, cover such points as: spreading on the fly, dumping on grade, dumping over the edge of a fill, feeding a hopper, handling sticky or frozen material, and dumping at the end of a road fill. Data is also given on the dumping mechanism, tires, and engine parts. Job photos are included.

To obtain the folder write to C & D Division of Yuba Mfg. Co., Folsom Blvd., Perkins, Calif., or use the Request Card that is bound in at page 18. Circle No. 150.

Fuller plans expansion

The Fuller Mfg. Co., Kalamazoo, Mich., manufacturer of transmission equipment, plans to add approximately $2 million in buildings and machinery to its present facilities this year. The addition will bring total area of the facilities to 224,000 square feet.

Scheduled for completion in December of this year, the new building is expected to be in full operation during the first quarter of 1957.

LIMA Type 24 Pullshovel with 17'6" boom, 6'0" bucket arm and ½ cu. yd. bucket.

LIMA Type 24 Jobmaster
best all-purpose performer in its class

Here's a rugged, ½ yd. all-purpose machine with big machine features. Lima's modern, versatile Type 24 *Jobmaster*, a quality-built specialist in its class, has been designed to fit every one of your job needs.

The *Jobmaster* is available with gasoline, diesel or electric power. It can be equipped as a shovel, 13 ton crane, clamshell, dragline or ½ cu. yd. pullshovel with crawler, wagon or truck mountings. The front end equipment can be interchanged easily in the field.

Lima quality guarantees high output, low operating and maintenance costs with the *Jobmaster*. Why not boost your operating profits by putting it to work today. For complete details contact your nearby Lima distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

COMPARE QUALITY! No other machine gives you as much as a LIMA! These quality extras are yours with the Type 24:

1. All gears have machine cut teeth.
2. Heat treated ground shafting.
3. 55 anti-friction bearings.
4. Air for main and auxiliary controls.
5. Independent propel, third drum and power load lowering (optional).
6. Independent combination chain and cable crowd and retract.
7. Differential steering (similar to tractor).
8. Splined shafting.
9. Internal-external tooth jaw clutch for quick engagement and minimum backlash in gear train.
10. Inside dipper handle—square cross section.
11. All-welded steel construction.
12. Independent boom hoist with engine controlled boom lowering.
13. Floating steel disc type dirt seals in tread rollers.

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Construction Equipment Division — LIMA WORKS

OTHER DIVISIONS: Austin-Western • Eddystone • Electronics & Instrumentation • Hamilton • Loewy-Hydropress • Madsen • Pelton • Standard Steel Works

For more facts, use Reader-Reply Card opposite page 18 and circle No. 381

Marion appoints Geller

The new eastern district sales manager for the Marion Power Shovel Co., Marion, Ohio, is Myron Geller. He will be responsible for the sale of Marion's complete line of crawler and rubber-mounted excavators in northern New Jersey and in five New York counties, and New York City.

PROOF THAT POWER-PACK DOES THE JOB

FASTER...LESS SPILLAGE

YES, PROGRESS REPORTS PROVE SPEED AND EFFICIENCY

In a careful study of more than twenty different construction jobs replacing fine aggregate, the job records definitely showed a report of outstanding speed and a greater savings in labor required.

The Power-Pack Backfiller, ruggedly built for long and dependable service, is easily portable with four swivel wheels and a sure quick hitch. Can be used with any size dump truck, including trailer dumps. Dependable 8.25 Wisconsin engine. Heavy-duty carrying belt.

Write for literature describing advantages and features of Power-Pack Backfiller.

POWER-PACK CONVEYOR CO.

13910 ASPINWALL AVENUE • CLEVELAND 10, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 382

SAWING or FINISHING Concrete

It's all in the day's work for WISCONSIN-POWERED equipment

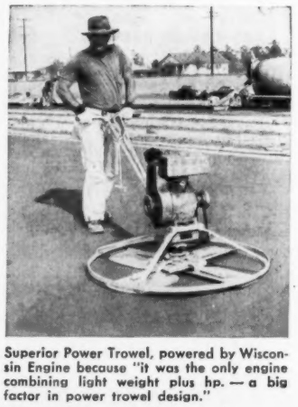
Clipper Concrete Saw working on Lincoln Memorial Bridge job, Washington, D.C., holding cutting depth to 3" to avoid cutting bridge steel beams.

If the job calls for cutting contraction joints instead of hand forming; trimming completely through 4½" slab; breaking up concrete for replacement or handling a variety of cutting operations . . . Wisconsin-powered CLIPPER Concrete Saws, made by Clipper Mfg., Kansas City, Mo., will slice through limestone concrete at a rate of 10 ft. per minute . . . or 12 ft. per minute through asphalt.

On the other hand, if the job calls for smooth finishing of concrete surfaces, a unit such as the Superior Power Trowel, made by Superior Cement Tool Corporation, of Lynwood, Calif., will handle the assignment with speed and efficiency.

Wherever there's a tough, rugged job to be done, you can depend on Wisconsin heavy-duty construction and foolproof AIR-COOLING at all operating temperatures from low sub-zero to 140° F. to get the job done on schedule. Wisconsin Engines are built to "take it" and keep on coming back for more of the same.

You can't do better than to specify "Wisconsin Power" for your equipment. Write for "Spec" Bulletin S-188.



Superior Power Trowel, powered by Wisconsin Engine because "it was the only engine combining light weight plus hp. — a big factor in power trowel design."

MOST H.P. HOURS

WISCONSIN MOTOR CORPORATION

World's Largest Builders of Heavy-Duty Air-Cooled Engines

MILWAUKEE 46, WISCONSIN

For more facts, use Reader-Reply Card opposite page 18 and circle No. 383

All-welded bridge girde

Spirals of ⅝-inch steel rods run along the flanges of the 12 girders that have been set parallel for one of the spans. The steel rods will be embedded in concrete to take horizontal shear loads.

A number of unusual design and construction features mark the 80,000-pound steel plate girders in New York State's Erie Thruway bridge across Cattaraugus Creek near Buffalo. One of the largest all-welded steel highway bridges in the east, this new crossing has five 132-foot spans, each of which incorporates 12 parallel girders to support the reinforced-concrete deck. The deck itself, 112 feet wide, carries two 49-foot roadways, an 8-foot raised mall, and two cantilevered sidewalks.

The big job of welding the massive girders without misalignment or distortion, and with the desired camber, was handled at the Cheektowaga plant of Ernst Construction Corp., Buffalo, N. Y. Girder webs are of 7/16-inch plate. The 66-inch-deep single-flange plates vary from 1 to 3½ inches in thickness on the bottom and from 1 to 2½ inches in thickness on the top. Stiffener plates, 11/16 inch thick, are 11 inches wide except at the ends, where 1-inch plate is fitted flush. Interior girders have a 3½ inch camber; fascia girders and those under the mall are cambered 4 inches at the center line.

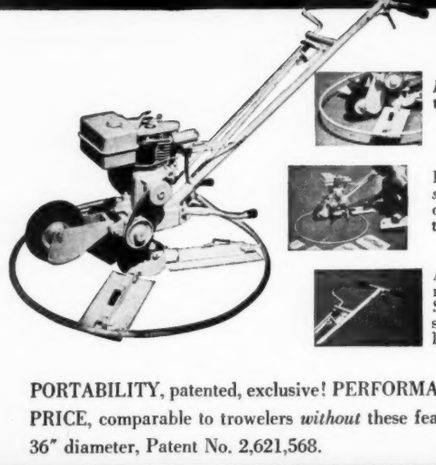
Low-hydrogen electrodes, used for maximum weld quality, started fabrication with four butt welds in the top flange and six butt welds in the lower members of each 132-foot girder. To eliminate the chance that an undue concentration of stress would be set up after the welds had been made, mating ends were cut at an angle of 45 degrees to the center line.

Continuous fillet welds on both sides, varying from 5/16 and ⅜-inch depending on the thickness of the steel, were used to attach flange plates to the webs. These long seams were laid by automatic submerged-arc welders. Semi-automatic submerged-arc welding was also used in the fabrication process, particularly on stiffeners. An E6013 electrode was specified for much of the manual welding for ease of handling, minimum spatter, and smooth bead appearance.

Intermediate and end stiffeners were fillet-welded to the underside of the top flange and to the web. At the lower ends, however, ½-inch filler plates, measuring 4×10 inches, were used between the flange and the stiffeners. These filler plates were first fillet-welded to the flange, then the stiffeners were welded to the fillers on either side so that the welds would not run perpendicular to the line of stress in the tension flange.

Outside or fascia girders were fabricated with brackets that serve two

Only one man to move a White TROWELER



Retractable wheel, up to trowel, down to move.

Remove blades and ring in *seconds* . . . for cleaning, changing blades, or moving through doorways.

Adjust blade pitch *during* rotation from handle. Safety throttle control stops rotation if operator lets go handle.

PORTABILITY, patented, exclusive! PERFORMANCE, unbeatable! PRICE, comparable to trowelers *without* these features! Model T-1, 36" diameter, Patent No. 2,621,568.

White MANUFACTURING COMPANY

ELKHART 9, INDIANA

For more facts, use Reader-Reply Card opposite page 18 and circle No. 384

...ve design innovations

...al of 12 steel girders, each weighing 80,000 pounds, ...pport reinforced-concrete deck of five 132-foot spans

by ROBERT E. HAAS, District Engineer,
The Lincoln Electric Co., Buffalo, N. Y.

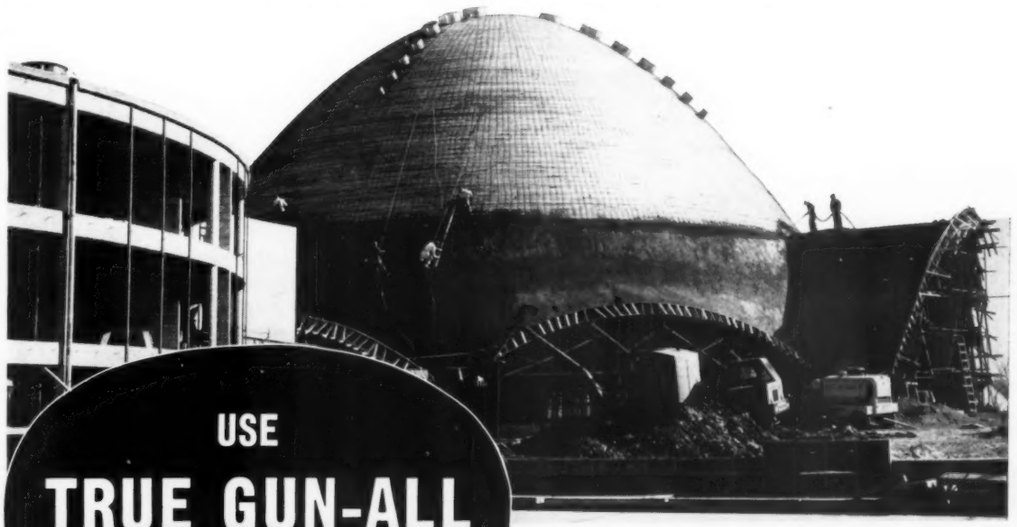
A pair of cranes get ready to lift a 40-ton girder section from the swivel dollies to the bridge piers. Brackets welded to the web of fascia girders act as stiffeners and support the cantilevered sidewalk.

purposes: they act as stiffeners, and they support the cantilevered concrete sidewalks. Spaced so that they are under the railing posts, but not directly opposite stiffeners on the inside girder web, the brackets, along with the fascia of the concrete sidewalk, are covered by a ⅜-inch plate welded to the end of the brackets. This covering, mainly for decorative purposes, runs the full length of the bridge.

Specifications permitted the girders to be spliced if they proved too unwieldy for transport, but this was not necessary. Two trailing swivel dollies and a truck-tractor were able to move the girders the 30 miles over a curving highway from the fabrication plant to the bridge site. Once the girders were in the creek bed below bridge level, they were lifted off the trailers by a pair of cranes and set on the bridge piers.

After the girders had been placed, 6-inch spirals of ⅝-inch steel rod were welded to the flanges. These were embedded in the 8-inch reinforced-concrete road slab to take horizontal shear loads. A membrane waterproofing was applied to this reinforced-concrete slab before the top 3⅜-inches of concrete, reinforced with wire mesh, was laid. THE END

Don't Guess—*BE MODERN*...



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TRUE GUN-ALL
WET MIX CONCRETE GUN

Thin shell paraboloid structure concrete applied by True Gun-All method.

Rebound approximately 5%
125 CFM rotary compressor
Low overall investment
Better bond to reinforcing steel
Controlled concrete

DUAL-CHAMBER TANK handles two batches alternately. Mixing blades are powered by Wisconsin engine. Meter controls water.

Applies concrete, mortar, refractories, stucco and all cementitious materials. Machine mixes controlled amounts of aggregate, cement and water in a dual chamber tank, and then blows the mix in place, one chamber at a time—controlled water—cement ratio. No separate mixer needed. Will handle sand of any moisture content. Shoots up to ⅜" aggregate. More uniform job thru positive mixing action. Production: Up to 4 yards *IN PLACE* per hour. Call or write for literature.

Dealer or distributor franchise may be available in your area.

NOZZLE sprays concrete around reinforcing bars, leaving no sand pockets. Air is sometimes added at the nozzle to boost adhesion.

TRUE GUN-ALL EQUIPMENT CORP.
MID STATES BUILDING
TULSA, OKLAHOMA

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INDIAN
DRINKING WATER & SUPPLY TANK NO. 75G

Replaces unsanitary bucket and dipper. Portable. Push button faucet. Takes cold, clean water to workers right on the job. 5-gallon steel tank is curved to fit the back. Sturdy construction. Highly popular.

E-Z
5-gal. Knapsack Sprayer
For spraying oil on machinery and equipment to prevent rust, etc. 4 to 5 gal. capacity. Also for spraying silicone water repellents for masonry work and many other spraying purposes.

Send for circular

DISCOUNT IN QUANTITY LOTS

D. B. SMITH & COMPANY
"Choice for Quality the World Over"
470 Main St., Utica 2, New York

For more facts, circle No. 385

Concrete placed for the deck of a bridge by the Bucyrus-Erie 22-B is consolidated by a Jackson gasoline-driven vibrator. The crane was also used to charge aggregates to the Winslow Binanbatch in the background.
C&E Staff Photo

Mobile concrete plant is shifted quickly for work on three spans

Simple plant is completely portable, fast, efficient; one truck moves entire setup from one spot to another

Contracting to build three reinforced-concrete bridges that were scattered throughout a 14-mile widening project, Hanna Construction Co., Greenwood, S. C., became completely mobile in order to get the work on the most efficient basis. One portable batch plant was used to produce concrete for all three structures, and it was moved from one location to another by only one truck.

Hanna did the bridge work for Robert E. Lee & Co., Inc., Manning, S. C., which had subcontracted the $77,000 bridge work from Cherokee, Inc., Columbia, S. C. Cherokee widened the section of U. S. 17 between Ridgeland and Pocotaligo, S. C., from a two to a four-lane divided highway.

The three bridges, two 84 feet long with three equal spans, and one 176 feet long with eight equal spans, are supported on precast concrete piles 16 inches square and about 25 feet long. Piles were driven to a 32-ton bearing by a Vulcan No. 1 hammer mounted on a Bucyrus-Erie crane.

The portable batch plant used by Hanna consisted of a Winslow Binanbatch aggregate hopper, a Jaeger three-bag mixer, and a Binanbatch 12-yard bin that was charged by a Bucyrus-Erie 22-B crane with a 55-foot boom and a ¾-yard clamshell bucket.

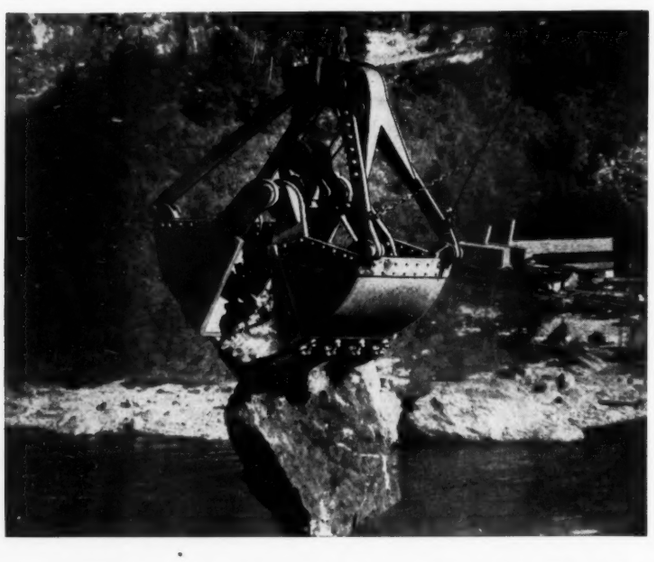
As work was completed on one of the bridges, the Binanbatch was picked up by the Bucyrus-Erie crane and placed on a truck, and the Jaeger mixer was hooked to the rear of the truck. Then the entire plant was shifted to a new location.

Plant production

Water for the Jaeger gasoline-driven mixer was obtained from a well that was sunk adjacent to each

Save your tough digging jobs for . . . .

ERIE'S NEW EXTRA HEAVY DUTY BUCKET BUILT TO HANDLE SHOT ROCK AND SHALE



Erie's new extra heavy duty bucket is for those really tough jobs —where the going is rugged—materials like shot rock, hard pan and shale. In fact, the new extra heavy duty model will come up with a mouthful of anything it can sink its teeth into. It hasn't been stopped yet.

All Erie clamshells are designed to bite hard and deep. The wide angle drop, the tremendous closing power of lever arm action, the multiple reeving and the big, sharp, manganese teeth—all these make a combination that really penetrates.

If you've a rough job coming up, or if you're tangled with something your present equipment can't handle, then you're talking our language. You need a new Erie Extra Heavy Duty clamshell. Why not learn more about this latest addition to the Erie line? Do it today.

These features make ERIE the bucket experienced operators prefer:

1. Top closing power from block and tackle, plus lever arm construction, plus precision balancing.
2. Manganese steel teeth and high carbon steel lips that bite up full payloads of even toughest clay and gumbo.
3. Rigid, one-piece, welded head that shrugs off bumps and jars. No shimmy. No wobble.
4. Two-line, continuous reeving. Adds up to 50% to cable life. Less down-time for reeving.
5. Low headroom for fast work in tight quarters; low center of gravity for easy positioning.

For catalogs, write Dept. CE 86

We will attend A.R.B.A. ROAD SHOW JAN. 28—FEB. 2, 1957

ERIE STRAYER CO.
3286 GEIST ROAD • ERIE, PENNSYLVANIA

Makers of Extra Light, Light, Standard and Wide Rehandlers, General Purpose Heavy Duty, Extra Heavy Duty, Electric and Mechanical Hook-on Clamshells.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 387

Anthes
FLAME-GUARD
the torch with the SQUARE BURNER

NEW!
Construction Torch

Designed and constructed by Anthes, a firm famous for torch and flare equipment in the trucking industry. Here is a unit that is leak-proof, self-righting, long-burning—and ruggedly made to perform faithfully under the most adverse weather conditions. Baked enamel body and burner. Chain for carrying. Write for complete data and prices. Anthes Force Oiler Co., Ft. Madison, Ia.

Anthes WEATHERCAP
The protector of engines with vertical exhaust pipes

Areas open for distributors.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 388

Concrete placing for a deck slab goes on as the portable plant turns out the mix. Sand and stone is weighed out by the Winslow Binanbatch to a rolling hopper that empties to the Jaeger mixer. Mixing water comes from a well near the bridge. *C&E Staff Photo*

bridge site by a Jaeger gasoline-driven pump.

The concrete mix, consisting of 165 pounds of sand, 344 pounds of 1-inch stone, and 94 pounds or one bag of Giant cement, was weighed at the portable aggregate bin and manually released into a hopper that rode rails extending to the skip of the Jaeger mixer. Here, the three-bag mix was deposited in the skip. About a half-pound of Pozzolith per bag of cement was added to the mix at the skip for high early strength in the concrete.

After being mixed, the concrete was discharged into a ½-yard concrete bucket that was handled by the same Bucyrus-Erie used to charge the bins. This crane deposited concrete in the formwork for the deck or the pile caps.

Pile caps, cast in place for all three bridges, were all 24 inches deep, 28 inches wide, and 42 feet long. The 6½-inch deck slab, built with plywood forms that were fabricated on the job, was made approximately 42 feet wide on each bridge so that it could accommodate a concrete mall that separates the existing highway structure from the new bridges. Reinforcing for the slabs consists of ½ to ⅝-inch rounds.

As concrete was placed, it was consolidated by a Jackson gasoline-driven vibrator. After concrete had attained initial set, a curing compound was placed so that forms could be stripped in 24 hours. Formwork supporting the seven monolithicly-cast beams of the deck slab was kept in place for a minimum of seven days during the curing process.

Robert Ham was superintendent for Hanna Construction Co., and D. W. Price, the resident engineer for the South Carolina State Highway Department on this project. THE END

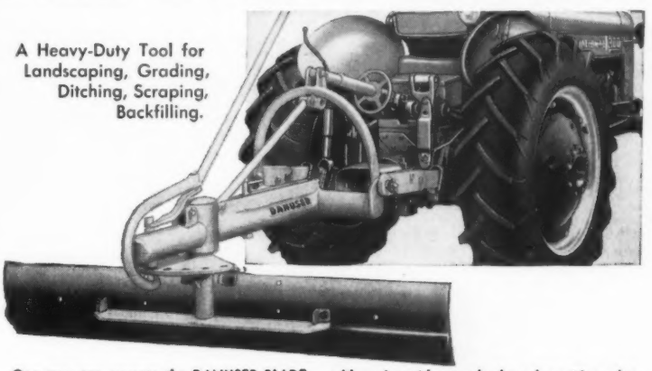
C. I. T. representative

O. E. Buchanan has been made a field representative for C. I. T. Corp., New York, N. Y. He will work in the central Mississippi area for the industrial financing firm.

Buchanan, former new-business manager of the Memphis division, will make his headquarters in Jackson. During World War II he served with the U. S. Corps of Engineers.

Low-Cost Blade Makes Your Light Tractor an Efficient Earth Mover!

A Heavy-Duty Tool for Landscaping, Grading, Ditching, Scraping, Backfilling.



One man can operate the DANUSER BLADE by himself and make adjustments without leaving the tractor seat. Blade uses the tractor three-point suspension principle, with adapter kits available for older models. It is raised and lowered by the tractor's hydraulic system, and turns all the way around so you can push with it.

Rugged construction throughout. Built of reinforced welded structural steel and heavy tubular members. Abrasion-resistant moldboard with replaceable, standard grader cutting edge. Moldboard mounting is supported on two oversize tapered bearings to maintain stability. It shifts 8 inches right or left of center for cutting beyond tractor wheel line.

Danuser built the original rear-mounted blade, and is still producing the finest tool of its kind on the market. Thousands are in daily use throughout the world. Tested and approved by tractor manufacturers.

"Quality Since 1910"

If you will give us the model of your tractor, we will be glad to furnish complete descriptive material.

DANUSER MACHINE CO.

535-43 East 3rd Street • Fulton, Missouri

For more facts, use Reader-Reply Card opposite page 18 and circle No. 390

McCARTER'S NEW INSTALLATION . . . for Harlem Blacktop, Inc., Wescosville, Pa. A 2½ ton portable Asphalt mixing plant. Designed and manufactured in our own factory.

for SPEED, PRODUCTION and PORTABILITY

McCarter Asphalt mixing plants are your answer . . .

SPEED Goes up fast, dismantles easily with a minimum of crew.

PRODUCTION Full flexibility for the individual customer or for high tonnage runs.

PORTABILITY Sectioned for easy moving, large or small jobs, under varying conditions.

INDIVIDUAL UNITS AVAILABLE Dryers (hot or cold material) Mixers, Buckets, Hoppers, Bins, Feeders, Collectors, Elevators and Steel Structures.

REPAIRING AND REMODELING Get better production, more efficient operation from your old plant. We specialize in this service.

▶ Engineering Counseling available to you at no obligation. We can tailor our equipment to your specifications.

THE McCARTER IRON WORKS, INC. NORRISTOWN, PA.

For more facts, use Reader-Reply Card opposite page 18 and circle No. 391

WE'RE SORRY...

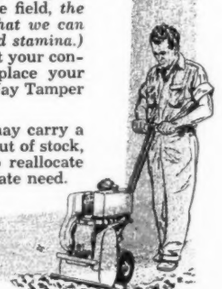
but we've been caught with our TAMPERS "down"

You may have tried to buy one of our Jay Tampers . . . unparalleled for its quality and performance. For *two reasons* we have been unable to supply dealers with enough units to meet current demand.

FIRST: Due to the nationwide acceptance by State and County Government engineers as well as Contractors both large and small, demand for Jay Tampers the first six months of this year has far outstripped our planned production . . . which we are rectifying.

SECOND: A prolonged strike at the Wisconsin engine plant has retarded *our* production. (And on thousands of units we have in the field, *the Wisconsin engine has proved to us that we can accept no substitute for its quality and stamina.)* But may we suggest that you stop in at your construction equipment dealers — and place your order now. We're sure you'll find the Jay Tamper on your job in the near future.

PRIORITY NOTE: The job you are on may carry a purchasing priority. If your dealer is out of stock, a note to us direct may enable us to reallocate so your dealer can meet your immediate need.



THE JAY Company
168 HOSACK ST.
COLUMBUS, OHIO

For more facts, use Reader-Reply Card opposite page 18 and circle No. 389

Weather charts

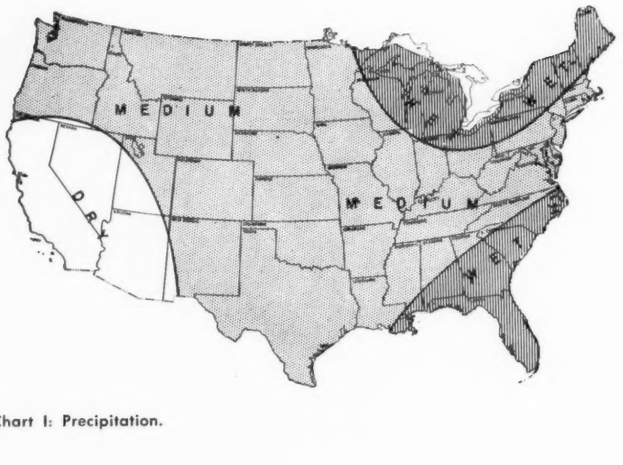


Chart I: Precipitation.

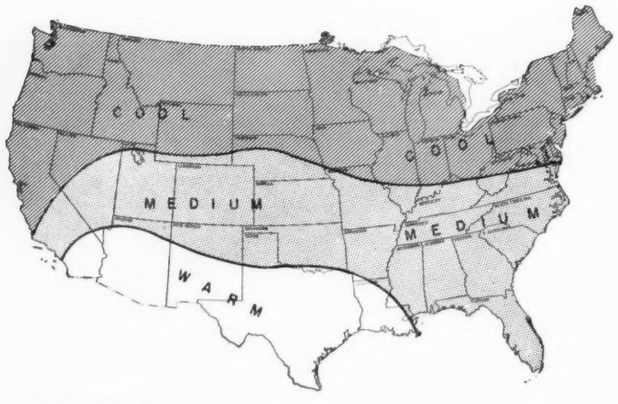


Chart II: Temperature.

The weather outlook for September

The two accompanying maps indicate expected weather conditions throughout the United States during the month of September. Giving the number of days with rainfall and the number of days when the temperature will reach 90 degrees or more, the maps show average conditions and are not intended as specific forecasts.

Those areas indicated as dry on Chart I will average fewer than four days of rainfall during the month. Medium areas can expect between four and ten rainy days, and wet regions will have in excess of ten days of rainfall during the month.

Regions indicated on Chart II as warm will probably have more than ten days of above 90-degree temperatures. Between two and ten such days are predicted for medium areas, and cold regions will have fewer than two days when temperatures reach 90 degrees.

Used in a relative sense, the charts show that more rain is expected in northern Ohio than in the southern part of the state. Likewise, southeastern Georgia will probably have more rainy days than will most of Mississippi. Louisiana can expect higher temperatures than Alabama.

Weather Corp. of America, 39 Broadway, New York, N. Y., and 611 Olive St., St. Louis, Mo., who prepares these maps for CONTRACTORS AND ENGINEERS, will answer readers' questions regarding the charts or the varied uses of climatology and meteorology to the construction industry. THE END

Manual on plywood floors presents engineering data

A laboratory report, "The 2.4.1 Plywood Floor System", presents engineering data, load tests, and construction details on the 2.4.1, a new combination of subfloor and underlayment plywood panel. The report also describes the flooring system and establishes its structural adequacy by both calculation and test methods.

Drawings illustrate how girders may be designed to carry load-bearing partitions and also show typical details. Particular consideration is given to moisture penetration, shrinkage, and strength of attachment.

Written by David Countryman, the report is available without charge from the Technical Department of the Douglas Fir Plywood Association, Tacoma 2, Wash.

Asphalt Institute, Purdue establish summer program

A group of 21 instructors and researchers from American engineering schools are enrolled in an 8-week summer-study program at Purdue University, Lafayette, Ind. The session is sponsored by Purdue under a fellowship program established in cooperation with the Asphalt Institute, College Park, Md.

Grants-in-aid totaling $20,000 were donated by the Institute. Purdue is furnishing the teaching personnel, facilities, and special services.

Consulting firm opened by Scanlan, McMahon

A new firm of consulting engineers, Scanlan-McMahon Associates, Inc., has established an office at 18725 Scottsdale Blvd., Shaker Heights, Ohio.

The principals in the firm, Thomas R. Scanlan and James F. McMahon, Jr., have mainly been concerned with the design, installation, and operation of industrial process and steam power plant equipment, notably process control and combustion control systems, together with process heaters and coolers for small to medium-size plants.

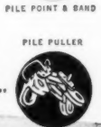
LIFT OBJECTS QUICKLY— SAFELY... ANY SHAPE OR SIZE!

with DOWNS SAFETY GRABS for Cranes and Hoists

Now you can tailor your lifting equipment to "fit" any shape or size materials to be moved with Downs Safety Grabs. No matter what your hoists are handling — pipe, rails, drums, plate or structural steel, stone, timber, boxes or odd-shaped objects of any size — there's a Downs Safety Grab designed for the job.

Downs Safety Grabs give you faster, easier lifting . . . and they're safety-engineered to provide a wider safety factor than listed capacity ratings. They can't let go until you release the load — real protection for workers that improves morale.

Write for FREE illustrated catalog 2008-B for complete information on every model — today!



DOWNS "THE GRIP that NEVER GIVES"

DOWNS CRANE & HOIST CO.
MECHANICAL ENGINEERS
540 W. VERNON AVE. • LOS ANGELES 37, CALIF.

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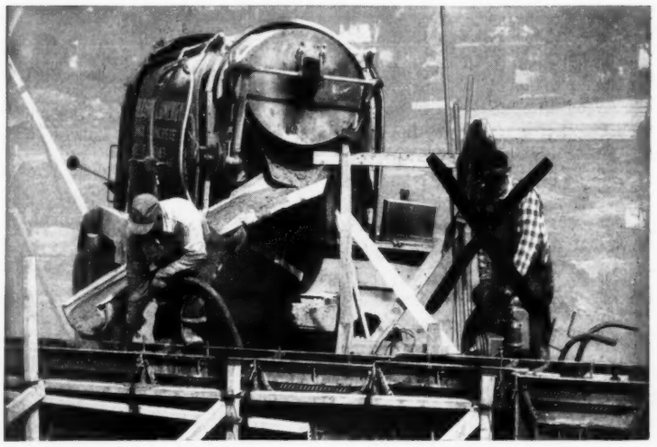


NEW MASTER "1-MAN" VIBRATOR CUTS VIBRATING COSTS IN HALF

Only 25 lbs. Easy to handle.

It weighs 25 pounds! It's all in one piece! It plugs into any regular 115 Volt AC or DC electric line . . . and with no heavy engine or motor to drag around, one man handles it easily.

The motor is sealed in the vibrating head, so there's no flexible shaft to get out of whack; no oiling or greasing problems; no kinking troubles.

No field maintenance is necessary: when motor head needs attention, snap it off and snap on a spare.

The vibration actually penetrates farther and leaves fewer voids in the concrete than old-style vibrators.

The price is *low*. The design has eliminated so much cost, and no special power source is required, but the big saving comes in use. Write for folder or ask your Master distributor for a free demonstration. You'll see exactly how the Master "1-Man" can cut your vibrating costs *at least* 50%.

MASTER VIBRATOR COMPANY
142 Stanley Ave., Dayton 1, Ohio
MASTER

For more facts, use Reader-Reply Card opposite page 18 and circle No. 393

Port Authority starts work on Brooklyn pier

The Port of New York Authority's development of the Brooklyn waterfront got under way with the start of construction on the first of ten new piers. A three-berth quay in Atlantic Basin, the $7 million Pier 11, already under construction, should be completed by April of 1958.

The quay will be 2,100 feet long and 270 feet wide. A single-story shedded area will measure 1,800 feet long × 150 feet wide. A 25-foot-wide apron will serve the facility, and a 20-foot-wide truck-loading platform will parallel the entire length of the land side, accommodating 144 trucks simultaneously.

The remainder of the two-mile development will be built over a seven-year period, in order that operations at existing facilities might continue with little inconvenience.

Prefabricated buildings

■ Prefabricated construction buildings that can be used as field offices, workshops, bunk houses, maintenance shops, or for storing materials and equipment are described in a folder from Economy Buildings, Inc. All models are equipped with skids and floor, double or single doors, windows, and ventilators at the roof peaks. Pictures show how any number of extensions may be added to the buildings.

To obtain the folder write to Economy Buildings, Inc., Thomas St., West Chicago, Ill., or use the Request Card at page 18. Circle No. 77.

Prime-Mover appoints district representative

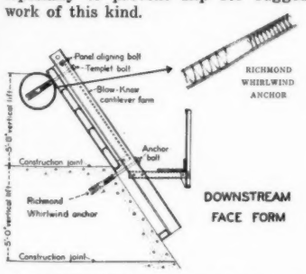
The Prime-Mover Co., Muscatine, Iowa, manufacturer of concrete-handling buggies, has appointed Jack L. Nichols district representative in the eastern section of the United States and Canada. He will cover Maryland, Virginia, West Virginia, Pennsylvania, New York, New Jersey, and the New England States. Washington, D. C., Ontario, Quebec, and Nova Scotia are also included in his territory.

Massive Pours

Merritt-Chapman & Scott and The Savin Construction Corp., contractors, used 55,800 Richmond Whirlwind Anchors *without slip or spall* in this vast dam construction at American River, Folsom, California.

Economies with Richmond Whirlwind Anchor

In dam construction like the above, considerable speed and economy are to be gained by pouring successive monoliths in 5 ft. lifts into steel cantilevered forms. Success of this money-saving method depends, however, on one-point form anchorage that will positively withstand massive overhead pours and loads imposed from all directions. Richmond's *Whirlwind* anchor was designed especially to prevent slip for rugged work of this kind.



These Richmond anchors are mounted on the form before each monolith is started. Installation is easy. The *Whirlwind* is made with double coils, one coil takes the form bolt, the other supplies added anchorage to prevent slip in concrete during its low early strength period. There is no spalling. Richmond's development of these special anchors has been in large part responsible for the constantly increasing popularity of this fast, more economical, anchorage and pouring method.

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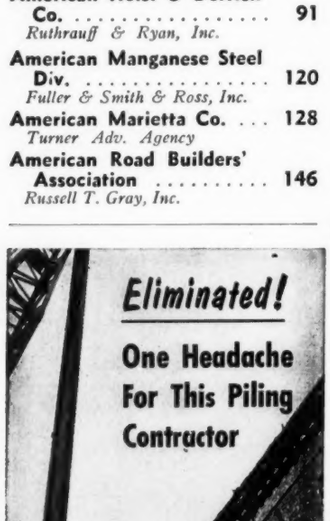

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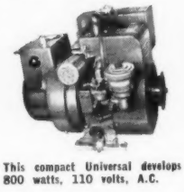

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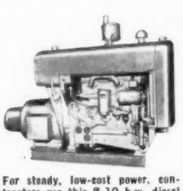

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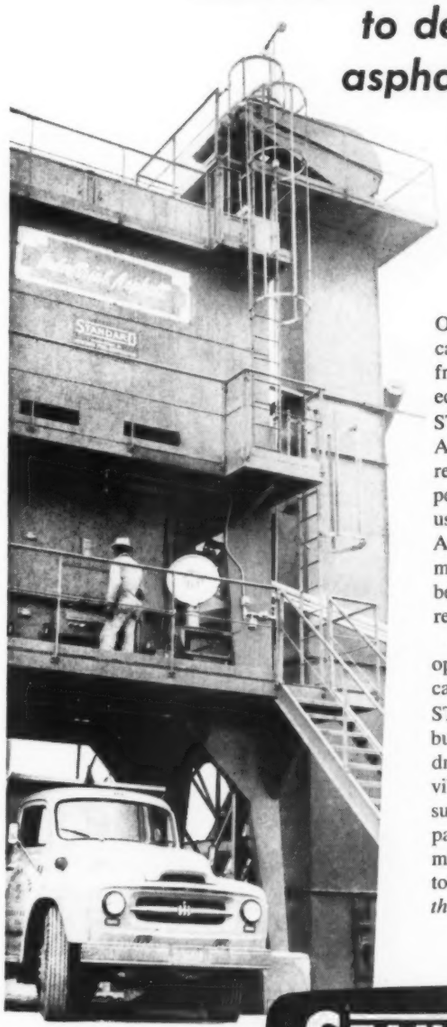

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Surveying washington

by HUBERT KELLEY, JR.

The House defeat of the school construction bill has been labeled everything from "cynical politicking" to "a triumph of reason." Some thought the bill was licked by opponents of racial integration; others suggested that the measure lost because lawmakers couldn't agree on a suitable federal-state formula for matching funds.

The defeat of the Kelley bill, by a 224–194 vote, cannot be explained so simply. It is true that some Southerners were bitterly opposed to the Powell amendment, which would have denied federal funds to states that failed to comply with the Supreme Court decision. But many Democrats feared this might happen whether the Powell amendment was voted in or not. At any rate, Republican votes helped pass the Powell amendment while sinking the construction bill itself.

It is just possible that if the Democrats had accepted the Administration plan to distribute funds partly according to the needs of states, the bill would have picked up enough Republican votes to slip through. But that wasn't the only reason so many Republicans voted against the bill, any more than integration was the sole issue with Democrats.

The long hearings which preceded the House debate revealed that a number of congressmen were simply wary of further federal encroachment on the powers of states. In past years, of course, there has been more talk about this states rights position than action. But lately, some congressmen are growing braver in turning down Washington money because their home states are getting more prosperous. The underdeveloped states are getting their factories at last, and are beginning to see that they can raise enough money to pay for their own public works.

Admittedly, some of these states could use some cash for school construction right now. The shortage of classrooms is a national emergency, with $10 billion needed to provide adequate facilities for pupils currently enrolled. But, even admitting that the situation is critical, some lawmakers wondered whether federal control would ever end once it was started. The Kelley bill would have run for four years and would have involved an expenditure of $1.6 billion.

Applying the provisions of the Davis-Bacon act to local school construction worried other congressmen. Some Republicans realized that their states would receive in aid only a small fraction of what it cost them. Lawmakers from districts with a high percentage of pupils in private and parochial schools feared their constituents would balk against further taxes for public schools.

These arguments arose many times during hearings, and they played their part in the final House vote, too. It is hard to tell whether they were valid arguments or not, because no one knows whether state and local governments will now step up to their responsibilities to school children.

The tragic thing is that many of them cannot do it, despite their new prosperity. The principal reason is that the federal government has taken up practically every source of revenue available to other government units. There is not much left on the table for hungry states and counties.

Certainly, no one will suggest that states know how to spend money less wisely than federal authorities. One lawmaker estimates that from 30 to 35 per cent of a federal appropriation is spent to administer the program toward which the money is directed.

It is probable that the only satisfactory solution to the school shortage is to send less money to the U. S. Treasury and more to county and state treasuries. As long as most of our tax money goes to Washington, states will have to look toward the federal government for help with public works problems.

One bill in this direction has been introduced by Rep. Richard Poff, (Rep.—Va.). In part, it provides that 1 per cent of all federal income taxes be turned back to states for educational purposes, without any control or interference, from Washington. The bill has not gone anywhere, partly because most Washington lawmakers hate to relinquish control over anything.

The defeat of the Kelley bill means that states and counties have one last chance to keep a federal agency out of their school systems. If they fail to meet this challenge by raising more money and building more classrooms, some sort of federal aid-to-education bill will pass eventually.

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SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.
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Public Roads will expand its staff by about 900 employees—most of them engineers and technicians. The increase will take place gradually over the next few years, with most of the new jobs being located outside Washington at local Bureau offices.

Bureau officials are a little worried about finding the caliber of men they need for the huge road building program, for government salaries are rarely competitive with those of private industry. But if a new bill introduced by Sen. Albert Gore (D.—Tenn.) makes the grade, the Bureau will not have to worry about engineers —or anything else.

Sen. Gore has announced that the Bureau is "utterly inadequate to meet the challenge of this immense, unprecedented program." In place of the Bureau, Gore advocates a federal highway commission, composed of three members appointed by the President and confirmed by the Senate. Not more than two members could be of the same political party. The Gore commission would resemble such agencies as the Federal Power Commission and the Atomic Energy Commission, and would assume functions of the Bureau of Public Roads and the Secretary of Commerce.

A bill increasing the annual appropriation for small flood control projects from $3 million a year to $10 million was approved by Congress in its closing days. To use the money the U. S. Corps of Engineers will not require specific authorizations from Congress.

Permission to build new compressors and 888 miles of field and main pipelines to serve wholesale customers in California, has been asked of the Federal Power Commission by El Paso Natural Gas Co. The cost of the new project will be $85.5 million.

FPC has already authorized Panhandle Eastern Pipe Line Co. to increase its facilities in the midwest. Panhandle's new certificates cover about 295 miles of pipeline and additional compressor stations. Cost will be in excess of $36 million.

The construction outlook has improved since last November, in the joint opinion of the Commerce and Labor Departments. The latest forecast—up a half a billion since fall—is that construction outlays in 1956 will top 1955 by 4 per cent. Total spending for all types of building should reach $44.5 billion.

The increase will stem from stepped-up construction of industrial plants and highways. Highway spending alone will reach a record $5.5 billion this year, estimates Lester Rogers, of the Associated General Contractors of America. By 1960, he adds, it should reach $8.5 billion.

But private housing starts will be off some 12 per cent. So far this year, new housing has hovered at an annual rate of 1,200,000 a year. Federal Housing Commissioner Norman Mason thinks this is too low. A spring survey showed fewer vacancies in rental projects, he said, than at any time in the past three years. His own estimate is that the market can absorb about 1,300,000 new dwelling units this year.

Mason also reports that the FHA program to underwrite rebuilding in slum areas has been greatly accelerated. During the first half of 1956, FHA commitments in this area totaled $21.75 million, and will provide 1,800 new homes in neighborhoods that were formerly blighted. He added that applications are being reviewed for 2,250 more units in three states, New York, Pennsylvania, and Michigan.

The program to which Mason refers is a partnership of private enterprise and the government in slum rehabilitation. FHA insures the housing loans against loss, but private capital handles the construction.

THE END

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CLARK EQUIPMENT COMPANY
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